# STUDY OF THE RELATIONSHIP BETWEEN PRIVATE STUDENT LOAN BORROWING AND PERSISTENCE & GRADUATION RATES OF TRADITIONAL STUDENTS AT A PRIVATE UNIVERSITY

by

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**STUDY OF THE RELATIONSHIP BETWEEN PRIVATE STUDENT LOAN BORROWING AND PERSISTENCE & GRADUATION RATES OF TRADITIONAL STUDENTS AT A PRIVATE UNIVERSITY**

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Private student loan borrowing has increased dramatically over the last decade. But because private student loans have only recently emerged as a major source of student financial aid, little research has been done to measure the impact of the borrowing trend. This research study used longitudinal data at one private institution to ascertain whether the borrowing trend has influenced its persistence and graduation rates.

Logistic regression was used to assess the relationship of private student loan borrowing on persistence & graduation rates, while controlling for the following other variables: SAT scores, high school grade point average, college grade point average, family income, race, gender, parent education level, federal student loans and institutional grants/scholarships.

The sets of independent variables used to address the research questions were determined to have goodness of fit in almost all instances according to their Hosmer and Lemeshow statstics. Private student loans as independent variables, however, were not significant contributors in the results for any of the research questions according to their Wald statistics. Consequently, it appears that no statistically significant relationship exists between private student loan borrowing and persistence & graduation rates when controlling for other noted factors.

Although the evidence suggests that no relationship exists between private student loan borrowing and persistence & graduation rates, the results of this study contains other valuable information. Several of the other independent variables were shown to have statistically

significant relationships to persistence & graduation rates. The independent variables with statistically significant relationships with persistence status were: SAT, college GPA, gender, race, institutional grants and federal student loans. The independent variables with statistically significant relationships with graduation status were: SAT, college GPA, race, institutional aid and federal student loans.

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## ACKNOWLEDGEMENTS

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# 1.0 INTRODUCTION

Private student loans, which are not guaranteed by federal or state governments, have existed for decades (Loonin & Cohen, 2008; McSwain, Price & Cunningham, 2006; Wegmann, Cunningham & Merisotis, 2003). Borrowing of private student loans, however, has substantially increased in the last few years. According to the College Board (2006), private student loans made up only 5% of total loans awarded in 1995. In 2001, that percentage climbed to 12% of total loans awarded, and by 2005, that percentage soared to 20% of total loans awarded (College Board, 2006).

Much of the increase in private student loan borrowing has occurred at private universities. According to some reports (McSwain, Price & Cunningham, 2006; Wegmann, et al., 2003), private student loan borrowers are most likely to be traditional, undergraduate students at private universities. "'Nearly 85% of private loans provided by student lending giant Sallie Mae go to undergraduate students, up from 72% five years ago,' says Barry Goulding, a Sallie Mae senior vice president" (Block, October 24, 2006).

It is not surprising that students at private universities have turned to private student loans, because costs at private universities have increased at a steep pace. From 1994-95 to 2004-05, the College Board reported (2004a) average tuition and fees at private four-year institutions rose 36% in inflation-adjusted dollars to $20,082. Total charges (including tuition, fees, room and board) at these same institutions averaged $27,516 in 2004-05 (College Board,

2004a). Over the same period of time, federal grant programs failed to keep pace with the tuition increases. According to the College Board (2005), the average Pell Grant per recipient increased only 29% in inflation-adjusted dollars to $2,469 from 1994-95 to 2004-05. The report also notes that the average award per recipient in the Supplemental Educational Opportunity Grant (SEOG) program actually fell 14% in inflation-adjusted dollars from 1994-95 to 2004-05. Stagnating financial aid at the federal level, combined with rapidly increasing tuition levels, have created an environment for students to turn to private student loans to finance their education.

It is unclear whether this shift to private student loans has had any impact on enrollment at private universities, where, as was previously noted, most private student loan borrowers enroll. This study made use of longitudinal data at one private institution to ascertain whether these borrowing trends have influenced its persistence and graduation rates, while controlling for other factors known to impact persistence and graduation rates.

## 1.1 PROBLEM STATEMENT AND RESEARCH QUESTIONS

This research study assessed the relationship between private student loan borrowing and persistence & graduation rates of traditional students at a private, four-year university.

This study also included controls for other factors that may also influence persistence and graduation rates. The selected independent variables, which will be subsequently discussed in detail, were: SAT scores, high school grade point average, college grade point average, family income, race, gender, parent education level, federal student loans and institutional grants/scholarships.

This study addressed the following research questions:

1. Does a statistically significant relationship exist between private student loan borrower status and persistence status of traditional students at a private, four-year university, while controlling for the aforementioned group of selected independent variables?
2. Does a statistically significant relationship exist between the dollar amount of private student loans borrowed annually and the persistence status of traditional students at a private, four-year university, while controlling for a group of selected independent variables?
3. Does a statistically significant relationship exist between private student loan borrower status and graduation status at a private, four-year university, while controlling for a group of selected independent variables?
4. Does a statistically significant relationship exist between aggregate dollar amount of private student loans borrowed and the graduation status of traditional students at a private, four-year university, while controlling for the aforementioned group of selected independent variables?

## 1.2 DEFINITION OF KEY TERMS

Private student loans—loans that students borrow that are specifically designed to pay for higher education expenses, excluding all loans in the federal aid programs (ex: Stafford, Perkins,

PLUS). For purposes of this study, only loans that require certification from the institution's Financial Aid Office were included.

Traditional students—students pursuing their bachelor's degree who enroll at the institution in the fall term immediately following their high school graduation.

Full-time students—students who enroll at the institution for a minimum of 12 credits per academic term.

Freshmen—first-time, traditional students who have not transferred from another institution.

Sophomores—traditional students who have not transferred from another institution and who return to the institution for their second year of study.

Juniors—traditional students who have not transferred from another institution and who return to the institution for their third year of study.

Seniors—traditional students who have not transferred from another institution and who return to the institution for their fourth year of study.

Fifth year students—traditional students who have not transferred from another institution and who return to the institution for their fifth year of undergraduate study.

Sixth year—traditional students who have not transferred from another institution and who return to the institution for their sixth year of undergraduate study.

## 1.3 SIGNIFICANCE

As noted previously, private institutions enroll the vast majority of private student loan borrowers. As such, private institutions have a more significant stake in understanding the possible relationship between private student loan borrowing and enrollment at their institutions. This research study assessed that relationship for one private institution, Robert Morris University, although similar institutions may find the information valuable, as well.

Many studies have examined the impact of various types of financial aid on enrollment. The results of these studies will be detailed in subsequent sections. Because private student lending has only recently emerged as a major source of financial aid, it has yet to be the topic of major research on persistence and graduation rates. The intent is for this study to begin a greater dialogue on the role of private student loan borrowing at various institutions, with a particular emphasis on private institutions.

Finally, it is expected that the results of this study will be useful in helping to shape future institutional financial aid policies. Because institutional dollars are scarce, guidance that will help maximize the appropriation of those dollars is necessary.

## 1.4 ABOUT ROBERT MORRIS UNIVERSITY

The institutional-level data for this study have been provided by Robert Morris University (RMU). The university's suburban campus is located in Moon Township, PA, which is a short distance from the Greater Pittsburgh International Airport and the city of Pittsburgh. The university also offers courses at an additional location in the Downtown neighborhood of Pittsburgh.

According to the National Center for Education Statistics (NCES), RMU is a private, not-for-profit institution that offers baccalaureate, masters and doctoral degrees. The university has recently (2007) been ranked by *US News* in the third tier of the Universities–Master's (North) category.

To provide context for this study and to show how RMU compares to other private institutions, additional statistics have been included in the tables below. The data in these tables have been obtained from the Integrated Postsecondary Education Data System (IPEDS). IPEDS data are submitted annually by institutions that participate in federal financial aid programs. IPEDS data are available to the public at http://nces.ed.gov/ipedspas/ExPT/stats.aspx.

The IPEDS website contains a feature called "Executive Peer Tool" that allows users to compare data from one institution against data from another institution or groups of institutions. The Executive Peer Tool has been used to identify other private, not-for-profit institutions in RMU's Carnegie Classification, which is listed on the website as Master's Colleges and Universities (larger programs). The comparison group includes 50 institutions across the country with enrollment sizes between 5,000 and 10,000 students. A complete list of the 50 institutions has been provided in the Appendix at the end of this report.

### 1.4.1 IPEDS Enrollment Data

The following table includes RMU enrollment data from the Fall 2007 term. The table also includes the mean of enrollment data of all of the institutions in the comparison group.

**Table 1.** IPEDS Enrollment Data for RMU and Comparison Group

| Category | Robert Morris University | Mean of Comparison Group |
|---|---|---|
| Total Enrollment | 5,055 | 6,183 |
| Undergraduate Enrollment | 3,984 | 4,232 |
| Men | 53% | 41% |
| Women | 47% | 59% |
| White, Non-Hispanic | 80% | 61% |
| Black, Non-Hispanic | 8% | 8% |
| Hispanic | 1% | 5% |
| Asian or Pacific Islander | 1% | 3% |
| Race/Ethnicity Unknown | 8% | 8% |
| Nonresident Alien | 2% | 2% |

(Source: IPEDS Executive Peer Tool, Enrollment Data Fall 2007)

RMU's Fall 2007 undergraduate enrollment (3,984) is very close to the mean of all the institutions in the comparison group (4,232). As such, RMU can be considered to be of average size for its classification.

One noticeable difference between RMU and the comparison group, however, is the proportion of men to women enrolled. The gender distribution at RMU shows more men were

enrolled than women, while the gender distribution at the comparison institutions shows more women were enrolled than men. In the comparison group, 59% of undergraduate enrollees are women. At RMU, though, only 47% of undergraduate enrollees are women.

### 1.4.2 IPEDS Institutional Data

The next table includes other institutional statistics for RMU and the comparison group. These statistics have been provided to give the reader a better understanding of the relative importance of certain factors at an institution like RMU.

**Table 2.** IPEDS Institutional Data for RMU and Comparison Group

| Category | Robert Morris University | Mean of Comparison Group |
|---|---|---|
| Admissions Selectivity | 76% | 65% |
| Graduation Rate | 51% | 57% |
| Endowment Per FTE | $4,533 | $11,731 |
| Cost | $17,900 | $23,890 |
| Tuition Dependency | 84% | 74% |

(Source: IPEDS Executive Peer Tool, Fall 2007)

*Admissions Selectivity*

The percentage of applicants admitted in a given year is referred to as admissions selectivity in the IPEDS data shown above. Institutions with low percentages of applicants admitted are considered to be highly selective in their admissions, while institutions with high percentages of applicants admitted are considered to be less selective in their admissions.

According to the IPEDS data in the preceding table, RMU is less selective than the average for its classification because it admitted a higher percentage of its applicants in Fall 2007 (76%) than did the comparison group (65%).

*Graduation Rate*

According to the IPEDS data, RMU's six-year graduation rate for the 2001 cohort is 51%. This puts RMU below the average for the comparison group, which has a mean graduation rate of 57%. (Note: RMU's graduation rates for the previous two cohorts were 55% and 56%, respectively)

*Endowment Size*

When considering its endowment size, RMU is not a relatively wealthy institution. According to the *Chronicle of Higher Education* (2007), the university's endowment of $17,848,000 came in at a position of 674 out of a list of 765 institutions nationwide. In the IPEDS data shown above, RMU's endowment per FTE ($4,533) is much lower than the average for the comparison group ($11,731).

*Cost*

The cost for students to attend RMU is inexpensive relative to the cost for students to attend other private universities nationwide. For example, the national average tuition at private institutions in 2004-05 was $20,082 (College Board, 2004a), while RMU's tuition during that same period of time was $14,226. According to the IPEDS data in the table above, RMU's tuition and fees for 2007-08 ($17,900) are much less than the average of the comparison group ($23,890).

*Tuition Dependency*

Tuition dependency listed in the IPEDS data above refers to the percent distribution of core revenues which come directly from tuition and fees. RMU can be considered a tuition-dependent institution, because, according to the IPEDS data shown above, 84% of its core revenues in the 2007 fiscal year came from tuition and fees. This percentage is higher than the average of the comparison group (74%).

### 1.4.3 IPEDS Financial Aid Data

The preceding factors provide context for the reader because they illustrate the relative strong ties between enrollment (via tuition and fees) and the financial health of RMU. Until additional revenue sources can be secured, RMU will be faced with the dilemma faced my institutions that are tuition dependent. That is, to improve or maintain the financial health of the institution, one can either a) increase tuition and fees to generate more revenue, or b) improve persistence rates to generate more revenue.

At first glance, the first option seems like an easy solution. The composition of the RMU study body, however, makes it difficult to increase tuition at a rapid pace. The following table contains IPEDS data on the financial aid recipients at RMU and the comparison group. The data are based on first-time, full-time students enrolled for the 2006-07 academic year.

**Table 3.** IPEDS Financial Aid Data for RMU and Comparison Group

| Category | Robert Morris University | Mean of Comparison Group |
|---|---|---|
| Federal Grants | 44% | 21% |
| State and Local Grants | 41% | 23% |
| Institutional Grants | 94% | 86% |
| Loans | 91% | 64% |

(Source: IPEDS Executive Peer Tool, Fall 2007)

As noted in the table, a much higher percentage of first-time, full-time students at RMU (44%) are receiving federal grants than are those in the comparison group (21%). This is, perhaps, the most telling statistic since federal grants predominantly go to the neediest students. RMU, therefore, has a higher proportion of needy students than the average of the comparison group. This makes it particularly difficult to increase tuition because needy students cannot afford to absorb additional costs. The university also cannot afford to subsidize much more in tuition increases for these needy students because of its limited endowment.

To go one step further, a greater percentage of students at RMU (91%) borrow loans than do those at the comparison group (64%). So, the ability for students to absorb tuition increases is further dependent on their access to student loans.

Because of its relative dependence on tuition revenue and its limited ability to raise tuition rapidly, RMU is particularly sensitive to factors that might influence persistence rates. Higher persistence rates equate to more financial stability and growth for the institution. This makes emphasis on improving persistence rates all the more important to an institution like RMU.

# 2.0 REVIEW OF RELATED LITERATURE

A detailed description of commonly used financial aid terms has been provided because of the frequent use of financial aid jargon in the research literature cited in this review.

## 2.1 OVERVIEW OF FINANCIAL AID TERMS

Financial aid, in the broadest definition, is simply money provided to help students cover the cost of their higher education expenses. Financial aid comes in many forms.

Descriptions of financial aid:

**Grants and Scholarships**, generally speaking, do not have to be repaid. Grants are given to financially needy students, while scholarships are given to academically or otherwise talented (athletically, musically, artistically, etc.) students.

**Loans** have to be repaid, usually after students graduate or cease to be enrolled.

**Work-study** paychecks are earned through on-campus or off-campus jobs.

**Tax credits** reduce student and/or parent federal tax liability on federal tax returns.

Financial aid is also awarded from a variety of sources, including federal and state governments, individual colleges and universities, and private organizations. According to the College Board (2006), the largest provider of financial aid is the federal government, which accounted for 66% of the total aid awarded for the 2005-06 academic year, excluding federal tax credits. Of the total aid awarded for 2005-06, 51% was in the form of federal loans (College Board, 2006).

The federal government lends money to students and parents through a number of educational loan programs, the most common of which are the Federal Family Education Loan (FFEL) and the Campus Based programs.

**Stafford Loans** fall under the FFEL umbrella. There are two different types of Stafford loans—subsidized Stafford loans and unsubsidized Stafford loans. Stafford loans may be obtained by all students who enroll at least half-time and who have not defaulted on a previous federal student loan. To maintain borrowing eligibility, students are also expected to achieve minimum academic standards.

The interest rate on the Stafford loan is now fixed at 6.8%. Students who demonstrate financial need (according to federal standards) qualify for subsidized Stafford loans, upon which no interest accrues while students are enrolled at least half-time. Interest accrues on unsubsidized Stafford loans regardless of whether students are enrolled. Students are required to begin repaying both subsidized and unsubsidized Stafford loans six months after they graduate or cease to be enrolled at least half-time. Undergraduate, dependent students are limited in the amount they can borrow through the Stafford loan program (Federal Student Aid, 2007). Those limits, which can be any combination of subsidized or unsubsidized loans, are listed in the table below.

**Table 4.** Annual Stafford Loan Limits for Dependent Undergraduates

| **Academic Level** | **Maximum Loan Amounts** |
|---|---|
| Freshman year | $3,500 Maximum Subsidized<br>$2,000 Additional Unsubsidized*<br>$5,500 Total |
| Sophomore year | $4,500 Maximum Subsidized<br>$2,000 Additional Unsubsidized*<br>$6,500 Total |
| Junior year | $5,500 Maximum Subsidized<br>$2,000 Additional Unsubsidized*<br>$7,500 Total |
| Senior year and above | $5,500 Maximum Subsidized<br>$2,000 Additional Unsubsidized*<br>$7,500 |

Source: (NASFAA, 2008)

* On May 7, 2008, President George Bush signed the Ensuring Continued Access to Student Loans Act of 2008 (NASFAA, 2008). Under this new law, all undergraduate, dependent students may borrow an additional $2,000 as listed above. The additional $2,000 must be in the form of an unsubsidized loan. In total, these students may now borrow an aggregate amount of $31,000.

In certain situations, undergraduate, dependent students may borrow additional funds than those listed above (for a total of $57,500) through the Stafford loan program. The additional amounts are listed in the table below. Students may only borrow these additional amounts when their parents are denied for PLUS loans, which are defined below.

**Table 5.** Additional Unsubsidized Stafford Loans for Parent PLUS Loan Denials

| Academic Level | Maximum Loan Amounts |
|---|---|
| Freshman year | $4,000 |
| Sophomore year | $4,000 |
| Junior year | $5,000 |
| Senior year and above | $5,000 |

Source: (NASFAA, 2008)

**PLUS Loans** also fall under the FFEL umbrella. They may be obtained by parents who have no negative credit history. Students must also meet all of the requirements described in the Stafford loan program. The interest rate on the PLUS loan is now fixed at 8.5%. Parents are required to being repaying the PLUS loan while the student is still enrolled, except in special cases where hardship forbearances are granted. Parents who meet the credit requirements may borrow enough to cover the student's entire educational expenses minus any other financial aid.

If a parent is denied a PLUS loan due to a negative credit history, an undergraduate, dependent student may borrow additional funds through the Stafford loan program (Federal Student Aid, 2007). Those additional amounts are listed in the table above.

**Perkins Loans** fall under the Campus Based umbrella. As part of the Campus Based program, institutions are given a lump sum of money to distribute to needy students. The

maximum amount of a Perkins loan is $4,000 annually for undergraduate students according to federal regulation (Federal Student Aid, 2007). In reality, the actual award may be lower than the maximum, because most institutions do not get a large enough allocation to give all eligible students the maximum award. In 2004-05, the College Board (2005) reported the average Perkins award per recipient was $1,877. In total, Campus Based aid accounted for just 2% of the total aid awarded in 2005-06 (College Board, 2006).

**Private Student Loans** do not fall under any of the federal program umbrellas and are not guaranteed by the federal government. They are essentially commercial loans that lenders have designed to mimic the Stafford loan program, including deferral of payment until after graduation. Most importantly, private student loans differ from Stafford loans in that student borrowers must pass a consumer credit check. Interest rates are also set based on market conditions, and are not regulated by the government. The interest rates on the loans tend to be higher than those in the Stafford loan program. Private loans may include various borrower fees.

## 2.2 BACKGROUND ON STUDENT LOAN EXPANSION

In order to understand the current state of private student loan borrowing, it is first necessary to examine the history and root causes that have contributed to the rapid expansion of private student loans. Increases in college costs and limited grant resources played a large role in that expansion.

As noted in the earlier, college costs have risen quickly in the last decade. While grant aid has also increased over the same period of time, students more frequently turned to loans to cover their educational costs. According to the College Board (2004b), grants accounted for

48% of total aid in 1993-94. By 2003-04, that number had dipped to 44 % of total aid, because grant increases had stagnated in relation to college costss. On the other hand, student educational loan debt has skyrocketed in the last decade. Borrowing in the federal student loan programs almost doubled from $28.7 billion in inflation-adjusted dollars in 1993-94 to $56.8 billion in 2003-04 (College Board, 2004b).

Loan volume increased, in part, because of changes that the federal government made in reauthorizing the Higher Education Act in 1992. "The reauthorization broadened eligibility for subsidized loans, increased loan limits, and opened the unsubsidized loan program to all students" (Harrast, 2004, p. 21). Students gained the ability to borrow loans regardless of financial need. Additionally, loan amounts were increased. The ability for more students to borrow, combined with increasing costs, paved the way for student loan borrowing to increase.

Increases in student loan borrowing have not been limited to federal student loans, though, because federal student loan programs cover only a small portion of the costs at private four-year institutions. Traditional freshmen, for example, could previously borrow only $3,500 through the federal Stafford student loan program (Federal Student Aid, 2007). When combined with the maximum federal Pell grant of $4,310 in the 2007-08 academic year (Federal Student Aid, 2007), that total ($7,810) still left a student far short of the average cost of almost $30,000 at a private institution. When institutions failed to make up the difference with institutional grants or campus-based federal aid, students were left with few alternates than the private student loan.

Maximum annual limits in the Federal Stafford Loan program were also only recently increased. Prior to the 2007-08 academic year, students could borrow a maximum of $2,625 in their freshman year and $3,500 in their sophomore year (Federal Student Aid, 2006).

Many students were not able to cover their expenses entirely through the federal loan programs because of the borrowing limits in the Stafford/Perkins Loan programs and the negative credit history requirement in the PLUS Loan program. Because of these limits, students turned to other sources, like private educational lenders, to cover the gap between their costs and their financial aid. According to Wegmann, et al. (2003, p. vii), "Private loans are used for many reasons: to fill the gap between a student's financial aid package and the actual cost of attendance, to help cover the expected family contribution (EFC) calculated under financial aid formulas, or to pay for additional expenses not normally covered by other forms of aid."

Increasingly, the most common alternative source of funding was the private student loan. In 2003-04, students borrowed almost $10.6 billion in private loans (College Board, 2004b). Wegmann, et al. (2003, p. viii) note, "Put another way, the total volume of private loans has now surpassed the amounts awarded annually under the Federal Student Educational Opportunity Grant (FSEOG), Federal Work-Study, and the Federal Perkins Loan programs combined." Since 1994, the College Board (2004b) reports private loan borrowing increased 692% in inflation-adjusted dollars.

The rapid rise in private student loan borrowing would not have been possible without the development of many new private loan products. Much like the rise in federal student loan borrowing, the rise in private student loan borrowing happened after the availability of loans was opened to a broader audience. One industry publication (Greentree Gazette, 2007) recently listed over 118 different private student loan products on the market.

Lenders also made it easy for students to obtain private student loans. For example, Sallie Mae, the largest lender in the FFEL program, advertised no less than five different types of private student loans on their website as recently as 2007 (http://www.salliemae.com). The

Signature Student Loan, which they identified as their most popular "after-Stafford loan," offered "easy, secure online applications with immediate credit decision and electronic signature." Students could borrow up to an aggregate amount of $100,000 in Signature Student Loans without ever submitting a paper application.

Lenders became more willing to jump into the private student loan market for a couple of reasons. Some lenders, for example, offered private student loan products to gain a competitive advantage in the lucrative Stafford loan market. The Higher Education Act specifically prohibits lenders from offering inducements, like favorable private loan terms, in exchange for guaranteed federal Stafford loan volume. In a recent report (Wegmann, et al., 2003), however, financial aid professionals noted that lenders were making these types of offers to institutions. McSwain, et al. (2006), argue that lenders offer private loan products in order to secure a position on the coveted "preferred lending lists" that most schools maintained for their Stafford loan programs. "This move was significant because, historically, the profitability of originating private loans was lower than the profitability of originating loans through the FFEL program. Thus lenders provided commercial loans in order to maintain their FFEL loan volume" (McSwain, Price & Cunningham, 2006, p.13-14).

Private student loans posed some risk to lenders because they were not guaranteed by the federal government. Wegmann, et al. (2003), report that, "Private lenders are able to neutralize this risk by placing higher interest rates on loan products for students exhibiting low credit ratings and requiring student borrowers, particularly first-year students, to have co-signers for their loans."

Federal Stafford Loans, on the other hand, posed minimal risk to lenders because of federal default reimbursement provisions of the FFEL program. As a result, lenders were often

marketing themselves as a sort of one-stop-shop for Stafford and private student loan borrowers. On the Sallie Mae website, for example, they advertised, "convenience of having all your student loans in one place and receiving one monthly bill when your Stafford loans are serviced by Sallie Mae." The prevailing assumption was that students would be most likely to borrow their Stafford Loans and private student loans through the same lender when given that option.

Additionally, risks that lenders would previously assumed in the private student loan market, like write-offs due to bankruptcy, were minimized. Recent changes in federal bankruptcy law made it almost impossible for borrowers to eliminate their student loan debt, both federal and private, by filing for bankruptcy (Burd, September 22, 2006). When combined with a potential to gain volume in the Stafford Loan program, the reduced risk made the private educational loan market much more attractive and profitable for new lenders to enter.

Other market forces made entrance in the private student loan market possible. The recent securitization of private student loan portfolios made it easier for lenders to offer private student loans without having large reserves of capital. According to McSwain, et al. (2006, p. 14), "Securitization involves bundling loans and entering them into a trust, from which a trustee sells securities to investors with the loans acting as collateral." As lenders securitized their portfolios, they were able to replenish their supply of cash, which, in return, allowed them to keep making new private student loans. Loonin, et al. (2008, p. 19) note, "Lenders must sell a certain amount of loans in order to generate sufficient pools of loans to sell to investors." Lender profits depended on their ability to securitize their loans and sell them to investors.

## 2.3 PRIVATE STUDENT LOAN PRICING AND ELIGIBILITY

Institutions that rely on private student loans as a major source of student funding face a number of potential issues because the lending industry is a risk-based industry. To illustrate this risk concept, it is necessary to explore how lenders set their pricing and eligibility requirements.

*Pricing*

Some lenders set interest rates on private student loans by using a combination of the applicant's (student and/or co-borrower) credit score and the Cohort Default Rate (CDR) of the institution that the student attends. According to the US Department of Education (2008), "A cohort default rate is the percentage of a school's borrowers who enter repayment on certain Federal Family Education Loan (FFEL) Program or William D. Ford Federal Direct Loan (Direct Loan) Program loans during a particular federal fiscal year (FY), October 1 to September 30, and default or meet other specified conditions prior to the end of the next fiscal year."

In a review of several private student loan programs, Loonin, et al. (2008, p. 23) found that, "Nearly all of the loan notes we examined stated explicitly that the borrower's school was a factor in pricing the loan. Some lenders will not offer loans to students at particular schools. Others will offer the highest rates to students at 'riskier' schools, generally meaning those with higher default rates."

Some schools with lower CDRs are often able to negotiate better private student loan interest rates for their students (Field, 2007, June 15). Though this negotiation tactic has come under scrutiny through the investigations of Andrew Cuomo, Attorney General of New York, it continues to be a standard industry practice.

Interest rates on private student loans are, most often, variable rates that are tied to Prime or London Interbank Offered Rate (LIBOR) rates. Some private student loans advertised rates as low as the prime rate minus one or two percentage points. As the prime or LIBOR rates increase, the repayment costs of private student loans increase. Of the 118 private loan products recently listed in an online industry guide (Greentree Gazette, 2007), the lowest possible interest rate on each product ranged from 2.8% to 12.0%. The majority of the interest rates ranged from 7% to 8% (Greentree Gazette, 2007).

The rise in private student loan borrowing coincided with some of the lowest interest rates in history. After the terrorist attacks on September 11, 2001, interest rates fell to historic lows. The prime rate, which had reached as low as 4% in the months after September 11$^{th}$, made private student loan borrowing relatively inexpensive. In recent years, however, the rates have fluctuated considerably. As of July 9, 2007, a popular on-line site (www.bankrate.com) reported the prime rate at 8.25%, an increase of over 4% over the last few years. After several rate decreases by the Fed, the rate sat at 5.25% on March 31, 2008.

Private student loan borrowers are directly impacted when interest rates rise and fall. For example, a student who borrowed a private student loan of $20,000 at 4% would have a monthly payment of $148. With a rate increase to 8.25%, the monthly payment goes up to $194, an increase of over 31% in a monthly payment (determined using the repayment calculator at www.salliemae.com). It is quite possible that interest rates for students who borrowed in their freshmen year would experience an interest rate that is four percent higher at graduation than when they initially borrowed the loan.

If interest rates rise, private institutions may find students reluctant to continue to borrow private student loans. The loans may become cost-prohibitive to students, who may be less

willing to go into substantial debt to finance their private education. Students may opt for less expensive public institutions. Or, they may forego higher education altogether without other financing alternatives. This is one of the risk-factors for institutions that rely on private student loans.

*Eligibility*

Like interest rates, private student loan approval standards are set by individual lenders. Most lenders use a credit score like FICO, which was created by the Fair Isaac Corporation (Fair Isaac Corporation, 2007) and made available to the three major credit reporting agencies (Equifax, Experian and TransUnion). FICO scores, which can range from 300 to 850, are based on the following:

**Table 6.** FICO Score Composition

| **FICO Category** | **Percent of Score** |
|---|---|
| Payment History | 35% |
| Amounts Owed | 30% |
| Length of Credit History | 15% |
| New Credit | 10% |
| Types of Credit In Use | 10% |

Source: (Fair Isaac Corporation, 2007)

In the past, lenders have been unwilling to release information on the FICO scores they require for students to get approved for their private student loans. Students would have to apply for the loan in order to see whether they would be approved or denied and to see the interest rates for which they qualified.

One of the inherent problems with the system is that the very process of applying for credit impacts one's FICO score (new credit category at 10% of the formula). Each new application for credit has the potential to lower the FICO score. Though the FICO scoring system does allow for "rate shopping" within a limited time period (Fair Isaac Corporation, 2007), it is possible that an applicant's FICO score could drop by applying for multiple private student loans in the fall, spring and summer terms. Students must be deemed credit-worthy by the lender each year in order to obtain the loan. This means that fluctuations in a student's credit record might impact his or her ability to obtain the loan from one year to the next. "For many student borrowers, a poor credit rating often is the largest barrier in obtaining a private loan" (Wegmann, et al., 2003).

Traditional, undergraduate students are at a disadvantage when it comes to relying on FICO scores for private student loans. The FICO formula weighs heavily the length of an applicant's credit history (15%) and their payment history (35%), both of which most traditional-aged students have not had the opportunity to build prior to enrollment in college. In fact, students may wreck their FICO score fairly easily by missing a few crucial payments on a credit card. Since they have yet to build up a credit history, any missed payments can be particularly damaging.

Because most students do not have significant credit history, they need to obtain co-borrowers to qualify for private student loans. Co-borrowers assume equal liability for the loan in the event that the primary borrower defaults. Some lenders actually require all freshmen to have co-borrowers regardless of their FICO score. Students who *are* able to qualify for private student loans without a co-borrower may not be eligible for the best interest rates.

Students often turn to their parents first when looking for co-borrowers. Parents, however, may be unable to qualify or unwilling to co-borrow. As with the student, fluctuations in a co-borrower's credit record can cause an application to be denied from one year to the next. Also, some parents simply do want to take on considerable debt loads on behalf of their child. If parents are unwilling or unable to be co-borrowers, students may have difficulty finding willing and able co-borrowers in their stead. If students are unable to secure the private student loan, they may be forced to drop out.

Private institutions that rely on private student loans as a crucial source of funding for enrolling students may be at the mercy of the financial health of their students and their parents. Dramatic reductions in approval rates might negatively impact persistence and graduation rates. Students who are unable to secure funding may have no choice but to enroll at less expensive public institutions, or not enroll at all. This is another risk-factor for institutions that rely on private student loans.

## 2.4 RECENT EVENTS CHANGE LOAN LANDSCAPE

Recent events have helped highlight the importance of reviewing the risks associated with the growth in the private student loan market. These events may play a part in shaping the future of the private student loan industry.

*Attorney General Investigation*

In February 2007, New York state attorney general Andrew Cuomo sent letters to 60 schools across the country requesting information about their relationships with student loan

companies (Fisher, 2007, February 16). Several institutions, including Duquesne University and Drexel University, were accused of accepting "kickbacks" in exchange for promoting private student loans from lenders like Education Finance Partners (Schackner, 2007). Although the schools argued that their lender partnerships allowed them to negotiate better interest rates for students and earn additional revenue for need-based aid, the schools were forced to end their revenue sharing agreements with lenders. New York University, Drexel University, University of Pennsylvania, Columbia University and Johns Hopkins University all agreed to settlements with Cuomo that included returning any funds associated with any revenue sharing loan programs and eliminating financial incentives tied to "preferred lender lists" (Cuomo, 2007b).

Under the scrutiny of the Cuomo investigation, the ability of schools to negotiate borrower benefits on behalf of their students was severely curtailed. According to the attorney general's official website (www.oag.state.ny.us), schools across the country adopted his College Loan Code of Conduct (see Table 10). Going forward, those schools may find it difficult to solicit attractive borrower benefits or interest rates for their students without the leverage that the "preferred lender list" once provided.

The Cuomo investigation not only targeted perceived illegal behavior at the institutional level, but it also targeted some of the top lenders (both federal and private). According to a Cuomo press release (Cuomo, 2007c), "CLC joins 10 other student loan companies who have reached agreement with Attorney General Cuomo's office, including the six largest lenders in America - Citibank, Sallie Mae, JP Morgan Chase, Bank of America, Wells Fargo, and Wachovia - as well as Education Finance Partners (EFP), CIT, National City Bank, and Regions Financial Corporation. Sallie Mae, Citibank, EFP, CIT, Johns Hopkins University, Columbia University, Mercy College, Career Education Corporation, and now CLC have all agreed to

contribute a total of $11.7 million to the National Education Fund established by Attorney General Cuomo. This fund is dedicated to educating and assisting the country's high school students and their families about the financial aid process."

**Table 7.** Andrew Cuomo College Code of Conduct

| | |
|---|---|
| 1. Revenue Sharing Prohibition | Colleges are prohibited from receiving anything of value from any lending institution in exchange for any advantage sought by the lending institution. Lenders can no longer pay to get on a school's preferred lender list. |
| 2. Gift and Trip Prohibition | College employees are prohibited from taking anything of more than nominal value from any lending institution. This includes a prohibition on trips for financial aid officers and other college officials paid for by lenders. |
| 3. Advisory Board Compensation Rules | College employees are prohibited from receiving anything of value for serving on the advisory board of any lending institution. |
| 4. Preferred Lender Guidelines | College preferred lender lists must be based solely on the best interests of the students or parents who may use the list without regard to financial interests of the College. |
| 5. Preferred Lender Disclosure | On all preferred lender lists the College must clearly and fully disclose the criteria and process used to select preferred lenders. Students must also be told that they have the right and ability to select the lender of their choice regardless of the preferred lender list. |
| 6. Loan Resale Disclosure | No lender may appear on a preferred lender list if the lender has an agreement to sell its loans to another lender without disclosing this fact. In addition, no lender may bargain to be a preferred lender with respect to a certain type of loan by providing benefits to a College as to another type of loan. |
| 7. Call-Center Prohibition | College must ensure that employees of lenders never identify themselves to students as employees of the colleges. No employee of a lender may ever work in or provide staffing to a college financial aid office. |

(Source: Cuomo, 2007)

Most recently, Cuomo settled with seven additional companies who agreed to end deceptive lending practices. "The seven lenders — Campus Door, EduCap, GMAC Bank, Graduate Loan Associates, Nelnet, NextStudent, and Xanthus Financial Services — agreed as part of the settlement to pay a total of more than $1.4-million into a fund to help students navigate the financial-aid process (Basken, 2008, September 2008).

*Legislative Changes*

In September 2007, President George W. Bush signed a bill that cut into lender profits for Stafford loans. The subsidy rate paid to for-profit lenders was cut by .55%, while the subsidy rate paid to non-profit lenders was cut by .35% (Field, 2007, September 10). Basically, this meant that lenders would make fewer dollars on for each loan.

These changes drastically affected the profit structure of the lenders in the FFEL program. As a response, several lenders announced reductions in borrower benefits and staff sizes. Nelnet, for example, announced that it will no longer cover the costs of the origination fees for its borrowers (Field, 2007, October 12). Nelnet also announced that it will lay off 400 of its employees (Field, 2007, September 10).

The cuts in lender subsidies may prompt changes in the private student loan market. Some lenders may turn to the private student loan market to make up for their profit losses in the FFEL program. It is unclear at this point, though, whether those changes will lead to improvement or deterioration of the private student loan market. On one hand, competition among lenders for increased market share might drive down interest rates and increase approval rates. On the other hand, lenders might increase interest rates on private student loans to offset losses from their FFEL portfolios.

*Problems in the Credit Industry*

In addition to the attorney general investigation and the legislative changes to lender profits, the private student loan market has been affected by some problems associated with the meltdown of the subprime mortgage market. In the words of Loonin, et al. (2008, p. 11), "The effects of the subprime lending meltdown are being felt far beyond the mortgage market."

The most damaging effect has been the failure of lenders to sell their loans to investors. Pennsylvania Higher Education Assistance Agency (PHEAA), one of the country's largest FFEL lenders and also a private student lender, announced recently that they experienced "failed auctions," which essentially meant that the organization was unable to sell its loans on the bond market. In a press release on its website (2008), PHEAA explained that this was the first time that they had experienced "failed auctions", which could mean "substantially increasing its cost of borrowing and putting its ability to fund additional student loans at risk."

Without the ability to raise capital by selling loans, some lenders have opted out of the private student loan market. In a recent survey by the National Association of Independent Colleges and Universities (NAICU, 2008), 43.2% of institutional respondents reported that their lenders are leaving the private student loan market. Of those lenders who remain in the market, institutional survey respondents reported 45.6% would be increasing the credit requirements to obtain a loan, such as higher credit scores or mandatory co-signers. A total of 59.9% of the survey respondents also reported that private loan student borrowing was either "very important" or "critically important" to the financial health of their institution.

Some financial aid administrators have expressed concern that the retraction in the credit market will hamper their students' ability to borrow private student loans. According to a study by the National Association of Student Financial Aid Administrators (Draeger, 2008, p. 6),

"More than half of all respondents said it will be more difficult for their students to obtain a private loan for the coming academic year." Although a majority of respondents noted a concern about private student loan availability, only 25% reported in the survey to have some sort of plan in place to handle a scenario where private student loans may not be readily available, like making additional institutional aid funds or emergency loan funds available.

Not all lenders have opted out of the private student loan market, however. Chase Education Finance, the student-loan division of JP Morgan Chase & Company, announced that it has plans to expand its business. "Chase and other large banks can afford to lower their rates because they have their own substantial assets, in the form of borrower deposits. That sets them apart from most other student-loan companies, which rely on securities or other forms of outside investment to finance their lending" (Basken, 2008, February 29).

*Cumulative Effect of Recent Changes*

When viewed individually, each of the recent events serve as a warning to administrators that forces outside of an institution can easily affect the private student loan borrowing on its campus. Collectively, they (an ethics investigation, some legislative changes and a retraction in the credit market) demonstrate how a convergence of events can combine to unmask the risk inherent in the credit industry.

## 2.5 FACTORS THAT INFLUENCE PERSISTENCE & GRADUATION

Much of the research focuses on how certain student characteristics, such as standardized test scores (SAT or ACT) or high school grades, influence persistence and graduation rates. For

example, institutions that have higher selectivity in their admissions decisions also tend to have higher graduation rates, while institutions that have lower selectivity in their admissions decisions tend to have lower graduation rates (Mortenson, 1998). Further research indicates that increased graduation rates stem from the rigor of the high school curriculum taken by incoming students. The more "rigorous" the curriculum that the student completes in high school, the more likely it is that the student will persist and graduate from college (Adelman, 1999; Tierney, Colyar, & Corwin, 2003).

Additional factors, including a wide range of economic factors, have also been shown to have a relationship to persistence and graduation rates. Students who come from low socio-economic households are often cited as having lower persistence and graduation rates (Astin, 1997; Kezar, 2001; St. John, Hu & Weber, 2001; St. John, Gross, Musoba & Chung, 2005). In one research study (Engle & O'Brien, 2008), the researchers felt that the link between family income and persistence rates was so strong that they recommended establishing a federal requirement for institutions to report persistence and graduation rates by income levels.

Another important predictor is the educational attainment level of the parents. That is, if neither parent has earned a bachelor's degree, students are much more likely to drop out before graduation. First generation students overall have lower graduation rates (43 %) than non-first generation students (59 %) (Chen, 2005; United States General Accounting Office, 2003).

Race/ethnicity has also been determined to have a strong relationship to graduation rates. At many institutions, white students have much higher graduation rates than do black and Hispanic students. Many institutions have gaps in graduation rates between white and black students higher than ten percent (Carey, 2005; Carey, 2004; United States General Accounting Office, 2003).

There is also solid evidence that the amount of time that students spend working is related to their persistence through graduation. Studies by Beeson & Wessel (2002) and Pascarella & Terenzini (1991) indicate that students who work fewer than 20 hours per week have higher graduation rates. Conversely, students who work more than 35 hours per week have been shown to have lower graduation rates (ACE, 2003). Some studies have also shown that students who work more than 20 hours per week are likely to have lower graduation rates than those who do not (United States General Accounting Office, 2003).

Research on student characteristics certainly provides valuable insight to the risk factors that some students bring with them to colleges and universities. One website, www.CollegeResults.org, was designed so that schools could compare their graduation rates with other schools using certain student characteristics, such as selectivity or race (Carey, 2005). This gives institutions the ability to see how their rates stack up against similarly situated institutions. The website also has a functionality that allows the user to choose schools which it would like to compare itself against.

While it is important to understand the influence that student characteristics have on persistence and graduation rates, higher education institutions are not often in a position to change student characteristics in such a drastic way that would change their persistence and graduation rates. These institutions need to understand the risk factors associated with their student demographics and make adjustments in other areas to compensate for those factors.

A significant amount of research also deals with the way institutions improve their persistence and graduation rates despite having little control over student characteristics. The research focuses on how institutions adapt or change their behavior to mitigate student characteristics that have a negative relationship to persistence and graduation rates. Institutional

behaviors are often directly derived from research on student characteristics noted in the previous section. For example, institutions that admit students who perform poorly in high school might offer remedial coursework and special tutoring to compensate for their lack of academic preparedness.

The literature on institutional behaviors tends to fall into several broad categories, such as curricular requirements, academic support programs, social networking programs, financial aid packaging, etc. Many institutions have established comprehensive retention plans that incorporate a wide spectrum of institutional behaviors. A recent study by the Pell Institute (Engle & O'Brien, 2008) highlights how some institutions that have high persistence rates combine these different types of behaviors. Those behaviors include:

*Academic advising programs*

Academic advising provides students with a sense of direction at a university. Some institutions have taken advising a step further and have developed special advising centers for at-risk students (Muraskin, Lee, Wilner & Swail, 2004). Noel-Levitz, a leading academic consulting firm, recommends a seven-tiered approach using dedicated faculty and staff for this function (Levitz, Noel, Richter, 1999).

*Freshman year experience courses*

Often run as a one or two-semester course, a freshmen year experience course is designed to transition students to an institution while they are most at risk for dropping out. Results of one study (Muraksin, et al., 2004) has linked the freshman year experience with higher freshmen

retention rates. Tinto (1999) advocates combining academic advising with the freshman year experience.

*Summer bridge programs/or outreach programs*

Usually, a summer bridge program requires low-achieving students to attend specially designed courses during the summer preceding their first fall term. Students might be required to attend special advising sessions in addition to their coursework. Bringing at-risk freshmen, including freshmen whose academic credentials are weak, to campus prior to the start of the fall term aids in helping those students persist. Students are better prepared for the fall term because they have already taken one or two courses and have become accustomed to the campuses. These efforts have been found to increase retention efforts at some institutions (Muraskin, et al., 2004). Outreach programs can vary in their composition, but often focus on giving at-risk students special attention like the summer bridge programs. For example, students who participated in the Upward Bound program were four times more likely to earn a bachelor's degree than nonparticipating students with similar backgrounds (Kezar, 2001).

*Learning communities*

At some institutions, students are required to register for courses in clusters. These "learning communities" are designed so that students have a sense of belonging to the university community (Muraskin, et al., 2004; Tinto, 1998; Tinto, 1997). According to Engstrom and Tinto (2008, p. 7), "In some cases, learning communities link two courses together, such as a course in writing with a content course such as Sociology or History. In other cases, the entire first-semester curriculum is the same for all students in the learning community." Engstrom and

Tinto (2008) studied the impact of learning communities on "academically under-prepared, predominantly low-income students" and found that those students were more engaged and more likely to continue to enroll as sophomores than a comparison group.

## 2.6 IMPACT OF FINANCIAL AID ON PERSISTENCE & GRADUATION

Many studies have produced results that suggest that different sources of financial aid (grants in particular) have an impact on a student's *initial* choice to enroll at any particular institution (Desjardins, 2000; Heller, 2001b; St. John, 2000). There is less of a consensus, however, in the research on financial aid and its impact on persistence and graduation rates. St. John (2000, p. 61) notes, "Unfortunately, the research literature remains ambiguous regarding the impact of student financial aid on enrollment."

The ambiguity in the research literature stems, in part, from the vast differences between types of financial aid. Students react differently when offered gift aid, like grants and scholarships, versus self-help aid, like loans or work-study. DesJardins, Ahlburg and McCall (2002, p. 654) illustrate this point when they state that, "…they often fail to distinguish how different types of aid affect student decision-making, and very few of these studies examine how the effects of aid may change over time."

More recent research has focused on measuring the impact on persistence and graduation rates by the specific type of financial aid. St. John (2000, p. 68) explains, "Increasingly, student aid is being recognized as a crucial factor in the persistence process." A breakdown of the research results by type of aid follows.

*Grants and Scholarships*

Though grants and scholarships are usually awarded based on different student characteristics (grants are based on financial need and scholarships are based on merit), neither have to be repaid by the student.

Gansemer-Topf and Schuh (2005) recently reviewed financial aid expenditures at private liberal arts institutions to determine if the expenditures had an impact on persistence and graduation rates. In the study, they categorized institutions by their admissions selectivity. Their results revealed that "the amount of institutional grants per student" contributed "significantly" to both persistence and graduation rates at institutions that were considered to have low-selectivity in their admissions standards. Interestingly, the institutional grant aid did not have the same effect at institutions considered to have high-selectivity in their admissions standards.

Kerkvliet and Nowell (2005) also found disparities in the way similar aid impacted persistence rates at different institutions. They concluded that grant aid had a positive impact on student persistence at Weber State University, while the same grant aid did not have an impact on student persistence at Oregon State University.

Another study (St. John, et al., 2005) showed that students who received grants as part of the Indiana Twenty-first Century Scholars program graduated at lower rates than students who did not receive any grant aid. When compared against other similarly situated low-income students who did not get the Scholars grant aid, however, Scholars had a higher graduation rate. The authors concluded that the grant aid influenced graduation rates.

A new study of the Washington State Achievers Scholarship (O'Brien, Williamson, Engle & Downs, 2007) yielded similar results. Established by the Bill & Melinda Gates

Foundation, the Washington State Achievers Scholarship program awards grant aid annually to over 500 low-income students from the state of Washington. The authors found that the scholarship has had a positive effect on recipients' enrollment, persistence and graduation rates when compared nationally with other low-income students. Further, students who received the scholarship borrowed less than students who did not receive the scholarship.

A review of institutions with higher than average graduation rates (Muraskin, et al., 2004) revealed that some of the institutions have implemented a policy of replacing loan aid with institutional grant aid. DesJardins, et al. (2002) refer to this as the "Princeton" policy, because Princeton University was one of the first to publicly announce this new strategy for low income students. They created a model to predict the effect of the "Princeton" policy on a sample of University of Minnesota students. Their model predicted the "survival rate," or retention rate, would increase by about ten percent in the third year of enrollment when replacing loans with grants.

DesJardins, et al. (2002) also predicted the effect of different types of aid on the "survival rate." They concluded that grants had no impact on retention, but that scholarships of equal value to the grants did impact retention.

Several state grants have also been linked with higher retention rates. Full-time freshmen who received the Maryland Educational Assistance Grants (EAG), for example, were more likely to return for their sophomore year than those who did not receive the grants (Battaglini, 2004).

*Student loans*

A review of students at four-year institutions (Gladieux & Perna, 2005) showed that federal student loan borrowers and non-borrowers who enrolled in 1995-96 graduated at similar

rates. Another study of students enrolled in four year colleges universities from 1994-1999 (Kim, 2003) yielded similar results, though graduation rates varied somewhat when controlling for parent income levels.

St. John (2000) concluded that federal loan borrowing may have an impact on persistence rates, as well, particularly when the federal loan limits increase during the junior and senior years. DesJardins, et al. (2002) also found that loans may improve persistence rates, but to a lesser degree than other types of aid, like scholarships.

Several research studies have examined the effect that increasing federal student loan debt levels have on students after they graduate. Some of the research suggests that, even as borrowing levels have increased in federal student loan programs, debt burdens, when compared with salaries, have remained fairly constant over the last decade (Choy & Li, 2005). Another study indicated that student debt levels, although high, remain manageable for most borrowers (ACE, 2001). Most of the experts consider student loan payments that are under eight percent of monthly income to be acceptable (King & Frishberg, 2001; Heller, 2001a; Schereschel, 2000; Greiner, 1996).

Other studies contend that increasingly high federal student loan debt levels make repayment difficult, particularly for students who come from economically disadvantaged backgrounds or who enter low-paying professions (Shireman, Asher, Talwalker, Li, Irons, & Cota, 2006; Harrast, 2004; King & Bannon, 2002). In the 2002 National Student Loan Survey (Baum & O'Malley, 2003), borrowers with student loan debt to gross monthly income ratio of seven percent or more experienced some difficulty repaying their student loans. There is also an entire cadre of research that examines how debt levels keep students from enrolling in graduate

school enrollment or pursuing careers in low-paying, public-service type jobs (Swarthout, 2006; Donhart, 2004; Millett, 2003; Equal Justice Works, 2002; Heller, 2001a).

As noted, there has been significant research conducted to examine the impact of borrowing through the federal loan programs, there has been virtually no published research that examines the impact of private student loan borrowing on persistence and graduation rates at private four-year institutions. The most prominent reviews of private student loan borrowing (McSwain, et al., 2006; Wegmann, et al., 2003) focused, instead, on borrower demographics.

## 2.7 BENEFITS OF IMPROVED PERSISTENCE & GRADUATION

Why is it important to focus on issues that might possibly increase persistence and graduation rates? Keeping students enrolled through graduation benefits not only the student and the institution, but it also benefits society in general.

*Benefits to the student*

Much has been written about the economic advantage that people gain when they earn a bachelor's degree. Those with bachelor's degrees earned 62% more in 2003 than those with only a high school diploma (Baum & Payea, 2004).

The picture is bleak, though, for students who enroll for at least one year, borrow a student loan and drop out before graduation. Students who dropped out after borrowing a student loan at a four-year institution "were twice as likely to be unemployed as borrowers who received a degree, and more than ten times as likely to default on their loan." (Gladieux & Perna,

2005) Those students were also shown to fare worse economically than similar students who dropped out but who did not borrow a loan (Gladieux & Perna, 2005).

*Benefits to the institution*

When a student drops out of an institution, the institution loses valuable tuition revenue. For institutions that are heavily tuition dependent, the loss of even a few students can result in cash flow problems. According to Swail (2004), "The common logic regarding the cost of losing students is simply stated that an institution reduces its income when a student leaves…For instance, if a student leaves after the freshman year, the institution can calculate the lost tuition charges for subsequent years to degree. If tuition is $5,000 per year, a freshman dropout would relate to a net loss of $15,000 for a four-year degree program (without inflationary considerations)." When applying this logic to institutions whose tuition and fees exceed $20,000 per year, every freshman dropout would result in a loss of tuition revenue in excess of $80,000 over the subsequent three years.

Institutions must then spend additional resources to recruit new students to replace those who dropped out. On average, private institutions spent $533 to recruit each applicant (Hawkins & Clinedinst, 2006).

*Benefits to society*

Recent reports on the benefits of higher education noted several benefits to society. They include: lower unemployment and poverty, lower incarceration and smoking rates and higher civic participation (Baum & Payea, 2004; Institute for Higher Education Policy, 1998; Institute for Higher Education Policy, 2004; Institute for Higher Education Policy 2005). Additionally,

borrowers who drop out are more likely to default on their student loans (Gladieux & Perna, 2005). This is not just a student problem, "A significant national problem occurs when students drop out of college with high debt levels and have no certificate or degree to enhance earning power with which to repay the debt" (Dickeson, 2004).

## 2.8 CONCEPTUAL FRAMEWORKS OF PAST RESEARCH

Many of the published research studies reviewed in this paper were completed using quantitative, empirical research methods. Empirical methods seem to be particularly popular in research on financial aid programs and their impact on persistence and graduation rates. The quantitative method lends itself well to this type of research because it is necessary to measure persistence and graduation rates in order to analyze them. This is most likely borne out of the positivistic philosophy. "A fundamental tenet of positivism is, 'If something exists, it exists in a quantity and we can measure it'" (Eichelberger, 1989, p. 4).

There appears to be gravitation toward the use of numbers when measuring the effectiveness of a particular public policy, like the use of federal financial aid. In this era of accountability, many government agencies require the use of statistical data to "prove" whether a particular program is working or not. There seems to be a preference for empirical data because, by its scientific nature, it should be able to be recreated and verified. "A second researcher can replicate, as nearly as possible, the procedures described to see if similar results are obtained" (Eichelberger, 1989, p. 23).

Consider the study of the Indiana Twenty-first Century Scholars program as an example. To determine whether the grant affected graduation rates, the researchers compared graduation

statistics amongst various groups of students. The researchers concluded that the grant program was effective based on the percentage improvement by grant recipients (St. John, et al., 2005). The study of the Washington State Achievers Scholarship followed a similar framework, with similar results and conclusions (O'Brien, et al., 2007).

One possible reason for this empirical preference is that recipients of many financial aid programs often number in the thousands, and sometimes millions. It is very time intensive and expensive to gather qualitative data from so many recipients. Much of the research attempts to convey the effectiveness of a particular program using data that are easily and inexpensively collected.

In reviewing the literature, there were instances when a research project used qualitative data, such as those obtained from individual student interviews in the National Postsecondary Student Aid Study (NPSAS). Most often, these were provided as companion pieces to better illustrate the story of the "numbers." In the NPSAS, student interviewees are a small, representative sample of the larger national cohort of students. The qualitative data collected in the interview is meant to augment other types of data in the study collected from "institutional records and government databases" (NPSAS, 2008).

As another example, the research report for the Washington State Achievers Scholarship included profiles on individual students throughout the pages of the report. This technique is common when a researcher wants to take the focus off the aggregate and show how a particular policy affects individuals in the study. Though this helped to give a "face" to the "numbers," the clear emphasis of the report was on statistical research findings.

# 3.0 METHODOLOGY

## 3.1 OVERVIEW

This study used longitudinal data for two cohorts of traditional students at Robert Morris University (RMU). Data were gathered for all of the selected variables in the research questions and were then analyzed using logistic regression. According to Tabachnick and Fidell (2001, p.517), "Logistic regression allows one to predict a discrete outcome such as group membership from a set of variables that may be continuous, discrete, dichotomous, or a mix." Engstrom and Tinto (2008) used this type of analysis in their recent research on learning communities and their impact on persistence rates. "Logistic regression is ideally suited to model the effect of independent variables when the dependent variable under consideration is dichotomous (e.g. did or did not persist)" (Engstrom and Tinto, 2008, p. 5).

## 3.2 SAMPLE

The sample for the study consisted of two cohorts of traditional, full-time freshmen: the first cohort enrolled at RMU in the Fall 2001 (516 students) and the second cohort enrolled at RMU in Fall 2002 (472 students). The cohorts were combined into one data set of 988 students in total.

Traditional, full-time freshmen were chosen as the sample population for a number of reasons.

- Federal graduation rates are calculated using "full-time, first-time degree/certificate-seeking undergraduate students," (Knapp, Kelly-Reid, Whitmore, Huh, Levine, Berzofsky & Broyles, 2005). Since the federal government sets the standard for calculating graduation rates, it makes most sense to use the federally defined population of students in this research study. Doing so makes the resulting data and statistics easier to evaluate and compare against graduation rates at other institutions.
- As noted previously, full-time, traditional undergraduate students at private universities have been identified as the most likely to borrow private loans (Wegman, et al., 2003).

Additionally, the Fall 2001 and Fall 2002 cohorts were chosen for very specific reasons:

- The federal government has set a six-year graduation rate as the standard for comparison nationally. At the time onset of this research study, there was sufficient data to calculate a six-year graduation rate for all of the students in both cohorts.
- In 2001-02, tuition at this private university changed from a per- credit charge to a flat-rate charge for students taking 12-18 credits. The new flat-rate reflected a double-digit percentage increase over the per-credit rate from the previous year.
- In 2001-02, the university stopped participating in the Direct Lending program and began participating in the Federal Family Education Loan Program (FFELP). Under Direct Lending, students borrowed federal loans directly through the federal government. Under FFELP, students borrowed federal loans through the lender of their choice. FFELP lenders disseminated brochures and other materials describing their private

student loan options to students. Prior to this point, very little literature regarding private loans was distributed to students.

- As a result of the prior two items, students borrowed private loans at a much higher rate in 2001 than they had borrowed in the previous year.

Finally, this private, four-year university was chosen based on the availability of student level data. The opportunity to use student level data from this private institution provided a unique study of disaggregated data, which is quite difficult to collect without the cooperation of an individual institution.

## 3.3 DATA COLLECTION

Within the quantitative, empirical framework, data was collected by an "honest broker" as described by the University of Pittsburgh Institutional Review Board (IRB). The "honest broker," who was the Director of Financial Aid, extracted data from a variety of departments represented in the RMU Student Information Systems. The data was compiled into an Excel file by the Director of Financial and sent to the researcher. Prior to the information being released to the researcher, the Director of Financial Aid removed any private information that would reveal the identity of the individuals in the study. The Director of Financial Aid did not assign linkage codes and did not make any private information available to the researcher.

Following are the data that were chosen to be part of the proposed model.

*Dependent Variables*

Persistence status—Six years of student enrollment data were extracted from the university's information system for each cohort. For the Fall 2001 Cohort, enrollment data were obtained from the 2001-02 academic year to the 2006-07 academic year; and for the Fall 2002 Cohort, enrollment information were obtained from the 2002-03 academic year to the 2007-08 academic year. To combine the two cohorts into one database, however, it was necessary to code the enrollment data by academic rank (i.e. freshman, sophomore, junior, senior, fifth year and sixth year) rather than academic year (i.e. 2001-02, 2002-03, etc.).

Students who enrolled in any semester of a given year (freshman, sophomore, etc.) were labeled with a "1" for that particular year. Students who did not enroll in any semester of a given year were labeled with a "0" for that year. This process was repeated for each of the following years: freshman, sophomore, junior, senior, fifth year and sixth year.

Students who returned from one academic year to the next may also be referred to as "returners" in subsequent portions of this study. Conversely, students who did not return from one academic year to the next may be referred to as "non-returners."

Graduation status—Graduation information was extracted from the university's information system for each cohort. Students were considered graduates if they earned a baccalaureate degree within six academic years of their first enrollment. The cutoff term for the Fall 2001 cohort was Spring 2007, and the cutoff term for the Fall 2002 cohort was Spring 2008.

Students who graduated within six academic years were labeled with a "1." Students who did not graduate within six academic years were labeled with a "0." Students who graduated within six academic years may also be referred to as "graduates" in subsequent

portions of this study. Conversely, students who did not graduate within six academic years may be referred to as "non-graduates."

*Independent Variables*

Borrower status—Private student loan information was extracted from each student's financial account within university's information system. Those students whose accounts listed a payment from a private student loan in a given year were labeled with a "1" for that particular year. Students whose accounts show no payment from a private student loan in a given year were labeled with a "0" for that particular year. This process was repeated for each of the following years: freshman, sophomore, junior, senior, fifth year and sixth year.

In addition to the annual data, student account records were reviewed over the six year period to determine if students borrowed a private student loan at *any* point. Those students whose accounts listed a payment from a private student loan in *any* year within the six year period were labeled with a "1." Students whose accounts listed no payment from a private student loan in *any* year within a six year period were labeled with a "0."

Private student loan borrowers may also be referred to as "borrowers" in subsequent portions of this study, and others may be referred to as "non-borrowers."

Scholastic Aptitude Test (SAT) scores—Verbal and Math SAT scores were extracted from the university's information system. The Verbal and Math scores were added together to come up with a composite SAT score.

ACT scores were also extracted from the university's information system. When an SAT and ACT score both were present for a student, the SAT score was used in the database. A small

number of students, a total of 70 from both cohorts, submitted ACT scores only. Those ACT scores were converted to SAT scores using a conversion table available at http://collegeapps.about.com/od/standardizedtests/a/convertSAT2ACT.htm.

SAT scores were then collapsed into seven categories to minimize the impact of outliers and to ensure that there were ample numbers of cases per cell for the binary logistic process to run in SPSS. The SAT scores were broken down into the following categories: 1=less than 850, 2=850 to 940, 3=950 to1040, 4=1050 to1140, 5=1150 to1240, 6=1250 to 1600.

High School Grade Point Average (GPA) —High school GPA was extracted from the university's information system. There were five students with no reported high school GPA. Values for those five students were imputed using the SPSS "Replace Missing Value" function using the "Linear Trend at Point" option. According to the SPSS Help Menu, "The existing series is regressed on an index variable scaled 1 to n. Missing values are replaced with their predicted values."

College Grade Point Average (GPA)—College GPA was extracted from the university's information system at the end of each academic year. This process was repeated for each of the following years: freshman, sophomore, junior, senior, fifth year and sixth year. The GPA is based on a 4.0 scale.

Family Income—Family income was extracted from the financial aid database on campus. This information was originally reported by students and their parents on the Free Application for Federal Student Aid (FAFSA) in the first year of their enrollment (Fall 2001 or Fall 2002). Fifty

students had no reported value (null) for family income. Values for those students were imputed using the SPSS "Replace Missing Value" function using the "Linear Trend at Point" option.

Family incomes were then collapsed into ten categories to minimize the impact of outliers and to ensure that there were ample numbers of cases per cell for the binary logistic process to run in SPSS. Family incomes were broken down into the following categories: 1=$0 to $10,000, 2=$10,001 to $20,000, 3=$20,001 to $30,000, 4=$30,001 to $40,000, 5=$40,001 to $50,000, 6=$50,001 to $60,000, 7=$60,001 to $70,000, 8=$70,001 to $80,000, 9=$80,001 to $90,000, 10=$90,001 and above. The highest value that can be reported on the FAFSA is $999,999.

Race/ethnicity—Race/ethnicity was extracted from the university's information system. Students self-identified their race/ethnicity by completing a box on the admissions application. Original race/ethnicity categories with reported values were Asian, Black, Hispanic, Indian/Native American and White. Some of the race/ethnicity categories contained very few values (Asian=6, Hispanic=7 and Indian/Native American=1), however, which represented problems in the logistic regression process.

To solve this problem, the categories were collapsed into two new categories, White and Non-White. Students with an original reported value of White were labeled "1." All other students were labeled with a "0."

Gender—Gender was extracted from the university's information system. Students self-reported their gender on the admissions application. Female students were labeled "1" and male students were labeled "0."

Level of parent education—The highest level of parent education was extracted from the university's financial aid database. This information was originally reported by the students and their parents on the FAFSA in their first year of enrollment.

Data from the FAFSA included four categories: Middle school/Junior High, High school, College or Beyond, Other/Unknown. Additionally, parent data was sometimes provided for both mother and father. In those cases, the highest level of education was used.

The categories were collapsed to accommodate the regression progress. Students who reported College or Beyond were labeled with a "1." All other students with reported values were labeled with a "0." Students with no reported values were labeled with a "2."

Annual Federal Student Loans—The annual federal loan amounts were extracted from each student's financial account within university's information system. They included Subsidized Stafford Loans, Unsubsidized Stafford Loans and Perkins Loans. For purposes of this study, parent loans were NOT included. Total amounts of all federal loans were added together for one annual federal student loan amount. This process was repeated for each of the following years: freshman, sophomore, junior, senior, fifth year and sixth year.

Annual federal student loan amounts were then collapsed into three categories to minimize the impact of outliers and to ensure that there were ample numbers of cases per cell for the binary logistic process to run in SPSS. The categories were based on the federal loan limits for each academic level (referenced in the Review of Literature). Annual federal student loans were broken down into the following categories: Freshman: 0=$0, 1=up to $2,625, 2=more than

$2,625; Sophomore: 0=$0, 1=up to $3,500, 2=more than $3,500; Junior, Senior, Fifth and Sixth: 0=$0, 1=up to $5,500, 2=more than $5,500.

Annual Institutional Grants and Scholarships—The annual grants and scholarships were extracted from each student's financial account within university's information system. They included all institutional grants and scholarships, those types of institutional aid that do not have to be repaid. Total amounts of all institutional grants and scholarships were added together for one annual amount. This process was repeated for each of the following years: freshman, sophomore, junior, senior, fifth year and sixth year.

Annual institutional grant amounts were then collapsed into eight categories to minimize the impact of outliers and to ensure that there were ample numbers of cases per cell for the binary logistic process to run in SPSS. Annual institutional grants were broken down into the following categories: 0=$0, 1=up to $1,000, 2=$1,001 to $2,000, 3=$2,001 to $3,000, 4=$3,001 to $4,000, 5=4,001 to $5,000, 6=$5,001 to $6,000, 7=more than $6,000.

Annual Private Loan Amount—Private student loan amounts were extracted from each student's financial account within university's information system. Amounts of private students were added together to come up with one annual amount. This process was repeated for each of the following years: freshman, sophomore, junior, senior, fifth year and sixth year.

Annual private loan amounts were then collapsed into four categories to minimize the impact of outliers and to ensure that there were ample numbers of cases per cell for the binary logistic process to run in SPSS. Annual private loan amounts were broken down into the following categories: 0=$0, 1=up to $5,000, 2=$5,001 to $10,000, 3=more than $10,000.

Aggregate Federal Student Loans—The aggregate federal loan amount was calculated by adding together all of the annual federal student loans previously collected for each student.

Aggregate federal student loan amounts were then collapsed into seven categories to minimize the impact of outliers and to ensure that there were ample numbers of cases per cell for the binary logistic process to run in SPSS. Aggregate private loan amounts were broken down into the following categories: 0=$0, 1=up to $5,000, 2=$5,001 to $10,000, 3=$10,001 to $15,000, 4=$15,001 to $20,000, 5=$20,001 to $25,000, 6=more than $25,000.

Aggregate Institutional Grants and Scholarships—The aggregate grants and scholarship amount was calculated by adding together all of the annual institutional grants and scholarship amounts previously collected for each student.

Aggregate institutional grant amounts were then collapsed into seven categories to minimize the impact of outliers and to ensure that there were ample numbers of cases per cell for the binary logistic process to run in SPSS. Aggregate institutional grant amounts were broken down into the following categories: 0=$0, 1=up to $5,000, 2=$5,001 to $10,000, 3=$10,001 to $15,000, 4=$15,001 to $20,000, 5=$20,001 to $25,000, 6=more than $25,000.

Total Private Loan Amount—The total private loan amount was calculated by adding together all of the annual private loan amounts previously collected for each student.

Total private loan amounts were then collapsed into seven categories to minimize the impact of outliers and to ensure that there were ample numbers of cases per cell for the binary

logistic process to run in SPSS. Total private loan amounts were broken down into the following categories: 0=$0, 1=up to $5,000, 2=$5,001 to $10,000, 3=$10,001 to $15,000, 4=$15,001 to $20,000, 5=$20,001 to $25,000, 6=more than $25,000.

## 3.4 SUMMARY OF VARIABLES BY RESEARCH QUESTION

### 3.4.1 Research Question 1

Does a statistically significant relationship exist between private student loan borrower status and persistence status of traditional students at a private, four-year university, while controlling for the aforementioned group of selected independent variables?

**Table 8.** Variables for Research Question 1

| Dependent Variable (DV) | DV Coding | Independent Variable (IV) | IV Coding |
|---|---|---|---|
| Persistence Status | Not enrolled (0)<br>Enrolled (1) | Borrower Status | Non-Borrower (0)<br>Borrower (1) |
| | | SAT Score | <850 (1)<br>850-940 (2)<br>950-1040 (3)<br>1050-1140 (4)<br>1150-1240 (5)<br>1250-1600 (6) |
| | | High School GPA | 0.00 – 4.00 |
| | | College GPA | 0.00 – 4.00 |
| | | Family Income | $0 – $10,000 (1)<br>$10,001 – $20,000 (2)<br>$20,001 – $30,000 (3)<br>$30,001 – $40,000 (4)<br>$40,001 – $50,000 (5)<br>$50,001 – $60,000 (6)<br>$60,001 – $70,000 (7)<br>$70,001 – $80,000 (8)<br>$80,001 – $90,000 (9)<br>$90,001 – $999,999 (10) |
| | | Race/Ethnicity | Non-white (0)<br>White (1) |
| | | Gender | Male (0)<br>Female (1) |
| | | Parent Education Level | No college (0)<br>College or beyond (1)<br>Not reported (2) |
| | | Annual Federal Loans | $0 (0)<br>$1 – $2,625 (1)<br>>$2,625 (2) |
| | | Annual Institutional Grants and Scholarships | $0 (0)<br>$1 – $1,000 (1)<br>$1,001 – $2,000 (2)<br>$2,001 – $3,000 (3)<br>$3,001 – $4,000 (4)<br>$4,001 – $5,000 (5)<br>$5,001 – $6,000 (6)<br>>$6,000 (7) |

### 3.4.2 Research Question 2

Does a statistically significant relationship exist between the dollar amount of private student loans borrowed annually and the persistence status of traditional students at a private, four-year university, while controlling for a group of selected independent variables?

**Table 9.** Variables for Research Question 2

| Dependent Variable (DV) | DV Coding | Independent Variable (IV) | IV Coding |
|---|---|---|---|
| Persistence Status | Not enrolled (0)<br>Enrolled (1) | Annual Private Loan Amount | $0 (0)<br>$1 – $5,000 (1)<br>$5,001 – $10,000 (2)<br>>$10,000 (3) |
| | | SAT Score | <850 (1)<br>850-940 (2)<br>950-1040 (3)<br>1050-1140 (4)<br>1150-1240 (5)<br>1250-1600 (6) |
| | | High School GPA | 0.00 – 4.00 |
| | | College GPA | 0.00 – 4.00 |
| | | Family Income | $0 – $10,000 (1)<br>$10,001 – $20,000 (2)<br>$20,001 – $30,000 (3)<br>$30,001 – $40,000 (4)<br>$40,001 – $50,000 (5)<br>$50,001 – $60,000 (6)<br>$60,001 – $70,000 (7)<br>$70,001 – $80,000 (8)<br>$80,001 – $90,000 (9)<br>$90,001 – $999,999 (10) |
| | | Race/Ethnicity | Non-white (0)<br>White (1) |

| Dependent Variable (DV) | DV Coding | Independent Variable (IV) | IV Coding |
|---|---|---|---|
| | | Gender | Male (0)<br>Female (1) |
| | | Parent Education Level | No college (0)<br>College or beyond (1)<br>Not reported (2) |
| | | Annual Federal Loans | $0 (0)<br>$1 – $2,625 (1)<br>>$2,625 (2) |
| | | Annual Institutional Grants and Scholarships | $0 (0)<br>$1 – $1,000 (1)<br>$1,001 – $2,000 (2)<br>$2,001 – $3,000 (3)<br>$3,001 – $4,000 (4)<br>$4,001 – $5,000 (5)<br>$5,001 – $6,000 (6)<br>>$6,000 (7) |

### 3.4.3 Research Question 3

Does a statistically significant relationship exist between private student loan borrower status and graduation status at a private, four-year university, while controlling for a group of selected independent variables?

**Table 10.** Variables for Question 3

| Dependent Variable (DV) | DV Coding | Independent Variable (IV) | IV Coding |
|---|---|---|---|
| Graduation Status | Non-graduate (0)<br>Graduate (1) | Borrower Status | Non-Borrower (0)<br>Borrower (1) |
| | | SAT Score | <850 (1)<br>850-940 (2)<br>950-1040 (3)<br>1050-1140 (4)<br>1150-1240 (5)<br>1250-1600 (6) |

| Dependent Variable (DV) | DV Coding | Independent Variable (IV) | IV Coding |
|---|---|---|---|
| | | High School GPA | 0.00 – 4.00 |
| | | College GPA | 0.00 – 4.00 |
| | | Family Income | $0 – $10,000 (1)<br>$10,001 – $20,000 (2)<br>$20,001 – $30,000 (3)<br>$30,001 – $40,000 (4)<br>$40,001 – $50,000 (5)<br>$50,001 – $60,000 (6)<br>$60,001 – $70,000 (7)<br>$70,001 – $80,000 (8)<br>$80,001 – $90,000 (9)<br>$90,001 – $999,999 (10) |
| | | Race/Ethnicity | Non-white (0)<br>White (1) |
| | | Gender | Male (0)<br>Female (1) |
| | | Parent Education Level | No college (0)<br>College or beyond (1)<br>Not reported (2) |
| | | Aggregate Federal Loans | $0 (0)<br>$1 – $5,000 (1)<br>$5,001 –$10,000 (2)<br>>$10,000 (3) |
| | | Aggregate Institutional Grants and Scholarships | $0 (0)<br>$1 – $5,000 (1)<br>$5,001 – $10,000 (2)<br>$10,001 – $15,000 (3)<br>$15,001 – $20,000 (4)<br>$20,001 – $25,000 (5)<br>>$25,000 (6) |

### 3.4.4 Research Question 4

Does a statistically significant relationship exist between aggregate dollar amount of private student loans borrowed and the graduation status of traditional students at a private, four-year university, while controlling for the aforementioned group of selected independent variables?

**Table 11.** Variables for Question 4

| Dependent Variable (DV) | DV Coding | Independent Variable (IV) | IV Coding |
|---|---|---|---|
| Graduation Status | Non-graduate (0)<br>Graduate (1) | Total Private Loan Amount | $0 (0)<br>$1 – $5,000 (1)<br>$5,001 – $10,000 (2)<br>$10,001 – $$15,000 (3)<br>$15,001 – $20,000 (4)<br>$20,001 – $25,000 (5)<br>>$25,000 (6) |
| | | SAT Score | <850 (1)<br>850-940 (2)<br>950-1040 (3)<br>1050-1140 (4)<br>1150-1240 (5)<br>1250-1600 (6) |
| | | High School GPA | 0.00 – 4.00 |
| | | College GPA | 0.00 – 4.00 |
| | | Family Income | $0 – $10,000 (1)<br>$10,001 – $20,000 (2)<br>$20,001 – $30,000 (3)<br>$30,001 – $40,000 (4)<br>$40,001 – $50,000 (5)<br>$50,001 – $60,000 (6)<br>$60,001 – $70,000 (7)<br>$70,001 – $80,000 (8)<br>$80,001 – $90,000 (9)<br>$90,001 – $999,999 (10) |
| | | Race/Ethnicity | Non-white (0)<br>White (1) |
| | | Gender | Male (0)<br>Female (1) |
| | | Parent Education Level | No college (0)<br>College or beyond (1)<br>Not reported (2) |
| | | Aggregate Federal Loans | $0 (0)<br>$1 – $5,000 (1)<br>$5,001 –$10,000 (2)<br>>$10,000 (3) |
| | | Aggregate Institutional Grants and Scholarships | $0 (0)<br>$1 – $5,000 (1)<br>$5,001 – $10,000 (2)<br>$10,001 – $15,000 (3)<br>$15,001 – $20,000 (4)<br>$20,001 – $25,000 (5)<br>>$25,000 (6) |

## 3.5 VARIABLES EXCLUDED FROM THE STUDY

The variables included in the models were chosen for two distinct reasons:

1) They were shown to have some influence on persistence and graduation rates through the Review of Related Literature, **AND**

2) Data for the variable existed in a format that was easily and systematically accessible.

Some factors discussed in the Review of Related Literature may have proven to be interesting independent variables, but were not included in the model because of logistical or other data collection concerns. For example, First Year Experience (FYE) programs were noted as having a positive relationship to persistence rates in the Review of Related Literature. FYE was not chosen as an independent variable, however, because all students in each of the cohorts took part in the FYE Course. Simply put, FYE was a constant, not a variable. Learning communities, on the other hand, were not chosen as independent variables because none existed at the institution.

Other factors were not chosen as independent variables because no data existed in a readily accessible format. For example, the institution maintained records for students who worked at campus jobs. The Director of Financial Aid, however, considered this information to be incomplete, as many students worked at jobs off-campus, as well. The university did not maintain data for students who worked at jobs not affiliated with the university. Using this data for an independent variable could have presented misleading or confusing results.

Though the institution did provide academic advising for at-risk students through many different programs, no one data point existed in any of the systems to pull together individual student-level data. Finally, summer bridge programs were offered differently between the two cohorts, making any analysis with that independent variable difficult.

## 3.6 ASSUMPTIONS

To facilitate the completion of the study, the researcher made a few assumptions:

- Only private loan amounts in which the school financial aid office certified the application were used in this study. While the researcher is aware that private loans exist that do not require school certification, those loans are difficult, if not impossible, to track. According to Greentree Gazette (2007), the majority of private loans require school certification. Therefore, those private loans that do not require school certification were excluded from this study.
- Only traditional, full-time students were included in the study. Non-traditional and part-time student persistence and graduation rates may also be impacted by private loan borrowing. As noted in the sampling section, those students have been excluded from the study for a variety of reasons.

## 3.7 LIMITATIONS

While the results of this study may be useful to the institution that provided the data, the results may not be applicable to other universities. For example, other private universities may experience different levels of student borrowing that do not fit within the same parameters used in this study. Additionally, other schools may be less reliant on tuition revenue, and, therefore, less financially sensitive to issues that influence their persistence rates.

Also, some institutions may enroll students who borrow direct-to-consumer student loans that do not require school certification by the Financial Aid Office. Direct-to-consumer loans were not covered by this research, but may prove to have some impact on persistence & graduation rates. This may be an area for future research.

Finally, the results of this study were based on data from the 2001-02 through the 2007-08 academic years. Recent changes in the credit market might alter future student behavior patterns in ways that were not reflected in the data in this report. In other words, past behavior may not accurately predict future behavior because of broader economic changes.

# 4.0 FINDINGS

## 4.1 RESEARCH QUESTION 1

*Does a statistically significant relationship exist between private student loan borrower status and persistence status of traditional students at a private, four-year university, while controlling for the aforementioned group of selected independent variables?*

### 4.1.1 Persistence to Sophomore Year

A database with a total of 988 students was created to obtain the results for this question. Of the 988 students enrolled for their freshmen year, 749 students returned for their sophomore year. Conversely, 239 students did *not* return for their sophomore year.

To break those numbers down further, 146 of the 988 students borrowed private student loans in their freshmen year. Forty-two of those private student loan borrowers did not return for their sophomore year. Below is a cross-tabulation table that illustrates the persistence difference from freshman to sophomore year between private student loan borrowers and non-borrowers.

**Table 12.** Cross-tabulation Table for Question 1, Persistence to Sophomore Year

| | Borrower Status as Freshman | | | |
|---|---|---|---|---|
| **Enrollment Status as Sophomore** | | Non-Borrower | Borrower | Total |
| | Not Enrolled | 197 | 42 | 239 |
| | Enrolled | 645 | 104 | 749 |
| | Total | 842 | 146 | 988 |

Data were further analyzed using the binary logistic regression feature of SPSS. Sophomore enrollment was coded as the dependent variable; while SAT score, high school GPA, freshman year GPA, family income, race, gender, parent education level, freshman federal student loans, freshman institutional grants and freshman private student loan borrower status were coded as the independent variables.

The set of variables was evaluated using the Hosmer and Lemeshow Goodness of Fit Test. Pallant (2005, p.167) recommends usage of the Hosmer and Lemeshow Goodness of Fit Test in her *SPSS Survival Manual* because it is the goodness of fit test that "SPSS states is the most reliable test of model fit available in SPSS."

For this set of variables, the chi-square value of the Hosmer and Lemeshow Goodness of Fit Test was 9.214 with 8 degrees of freedom and a significance level of .325. According to Pallant (2005, p. 167), "For the Hosmer-Lemeshow Goodness of Fit Test poor fit is indicated by a significance value less than .05, so to support our model we actually want a value greater than .05." Therefore, the significance level of this set of variables, at .325, suggests that the set of variables has goodness of fit. The following table summarizes the statistics related to the Hosmer and Lemeshow Test.

**Table 13.** Hosmer and Lemeshow Test for Question 1, Persistence to Sophomore Year

| Chi-Square | df | Sig. |
|---|---|---|
| 9.214 | 8 | .325 |

SPSS also measured the predictive ability of the set of variables by classifying each case (student) without using any independent variables. SPSS correctly classified persistence to sophomore level in 75.8% of the cases in the database without any independent variables. The system then classified each case (student) using all of the independent variables in the set. Overall, the set of variables correctly predicted persistence to sophomore year in 80.6% of the cases, which is an improvement over the percentage without any independent variables. The following table shows a breakdown of the classification using the independent variables. The set of variables was highly successful (95.7%) in predicting students who enrolled for their sophomore year, but much less successful (33.1%) in predicting students who did not enroll.

**Table 14.** Classification Table for Question 1, Persistence to Sophomore Year

| Observed | | Predicted | | |
|---|---|---|---|---|
| | | Enrollment Status as Sophomore | | |
| | | Not Enrolled | Enrolled | Percentage Correct |
| **Enrollment Status as Sophomore** | Not Enrolled | 79 | 160 | 33.1 |
| | Enrolled | 32 | 717 | 95.7 |
| | Overall Percentage | | | 80.6 |

While the overall set of variables has been shown to have goodness of fit, it is important to also determine the extent to which each independent variable contributed to the prediction.

Pallant (2005, p. 168) recommends use of the Wald statistic in order to measure the "contribution or importance of each of our predictor variables." According to Pallant (2005, p. 168), independent variables with Wald statistics with significance values of less than .05 "contribute significantly to the predictive ability of the model."

Although this set of variables passed the goodness of fit test, all of the independent variables did not contribute significantly to the predictive nature of the set. Only SAT score (.036), freshman year GPA (.000), gender (.041) and freshman institutional grants (.000) had a Wald level of significance less than .05, indicating significant level of contribution to the set of variables. Private student loan borrower status (.424) did not contribute to the predictive nature in this case. The following table contains a complete list of the Wald statistics for each of the independent variables.

**Table 15.** Variables in the Equation for Question 1, Persistence to Sophomore Year

| | B | S.E. | Wald | df | Sig. | Ex(B) |
|---|---|---|---|---|---|---|
| FreshmanBorrower Status(1) | .191 | .238 | .640 | 1 | .424 | 1.210 |
| HSGPA | -.393 | .241 | 2.658 | 1 | .103 | .675 |
| SAT | | | 11.942 | 5 | .036 | |
| SAT(1) | 1.242 | .667 | 3.466 | 1 | .063 | 3.462 |
| SAT(2) | .663 | .637 | 1.082 | 1 | .298 | 1.940 |
| SAT(3) | .385 | .622 | .383 | 1 | .536 | 1.470 |
| SAT(4) | .112 | .622 | .032 | 1 | .858 | 1.118 |
| SAT(5) | .406 | .681 | .355 | 1 | .551 | 1.501 |
| FreshmanGPA | 1.383 | .142 | 94.358 | 1 | .000 | 3.017 |
| FamilyIncome | | | 8.751 | 9 | .461 | |
| FamilyIncome(1) | .851 | .632 | 1.814 | 1 | .178 | 2.341 |
| FamilyIncome(2) | -.035 | .514 | .005 | 1 | .945 | .965 |
| FamilyIncome(3) | -.148 | .355 | .174 | 1 | .676 | .862 |
| FamilyIncome(4) | -.281 | .339 | .684 | 1 | .408 | .755 |
| FamilyIncome(5) | -.471 | .348 | 1.828 | 1 | .176 | .625 |
| FamilyIncome(6) | -.316 | .328 | .929 | 1 | .335 | .729 |
| FamilyIncome(7) | .115 | .338 | .116 | 1 | .734 | 1.122 |
| FamilyIncome(8) | .279 | .361 | .599 | 1 | .439 | 1.322 |
| FamilyIncome(9) | -.384 | .381 | 1.018 | 1 | .313 | .681 |
| Race(1) | -.286 | .287 | .996 | 1 | .318 | .751 |
| Gender(1) | .393 | .192 | 4.176 | 1 | .041 | 1.481 |
| ParentEdLevel | | | 2.778 | 2 | .249 | |
| ParentEdLevel(1) | -.506 | .404 | 1.568 | 1 | .210 | .603 |
| ParentEdLevel(2) | -.653 | .404 | 2.614 | 1 | .106 | .521 |
| FreshInstGrants | | | 29.378 | 7 | .000 | |
| FreshInstGrants(1) | -1.393 | .433 | 10.330 | 1 | .001 | .248 |
| FreshInstGrants(2) | -1.336 | .410 | 10.627 | 1 | .001 | .263 |
| FreshInstGrants(3) | -1.246 | .357 | 12.176 | 1 | .000 | .288 |
| FreshInstGrants(4) | -.234 | | | | | |
| FreshInstGrants(5) | -.411 | .389 | 1.115 | 1 | .291 | .663 |
| FreshInstGrants(6) | .082 | .442 | .034 | 1 | .854 | 1.085 |
| FreshInstGrants(7) | -.195 | .595 | .107 | 1 | .744 | .823 |
| FreshFederalLoans | | | 2.437 | 2 | .296 | |
| FreshFederalLoans(1) | -.339 | .306 | 1.227 | 1 | .268 | .712 |
| FreshFederalLoans(2) | .065 | .223 | .084 | 1 | .772 | 1.067 |
| Constant | | 1.220 | .330 | 1 | .566 | .496 |

This table contains additional information of statistical value, namely the odds ratio (denoted in column Ex(B)). According to Tabachnick and Fidell (2001, p. 549), "Odds ratios greater than 1 show the increase in odds of an outcome of 1 (the 'response' category) with a one-unit increase in the predictor; odds ratios less than one show the decrease in odds of that outcome with a one-unit change." They further note, "The statistically reliable predictors that change the odds of the outcome the most are interpreted as the most important. That is, the farther the odds ratio from 1, the more influential the predictor."

Of the four independent variables that contributed significantly, three had individual values with significant odds ratios: freshman year GPA, gender and freshman year institutional grants. The Wald levels of significance for the SAT score individual values (labeled 1-5) were shown to be at insignificant levels (.063, .298, .536, .858, .551).

*Interpretation for odds ratios:*

- Freshman year GPA—For every one unit increase in freshman year GPA, the odds of enrolling for sophomore year increased 3.989 when controlling for other variables. Freshman year GPA had a positive relationship with enrollment status.
- Gender—As a categorical variable, the odds ratio was calculated in relation to a reference value. In this instance, "female" was used as the reference value. Therefore, the odds of male students enrolling for sophomore year were 1.481 greater than the odds of female students enrolling for sophomore year when controlling for other variables.
- Freshman year institutional grants—As a categorical variable, "$6,001 and above" was used as the reference value. Note that only the first three values ($0, up to $1,000, $1,001-$2,000) had significant Wald values. When controlling for other variables, the odds of a student with no institutional grants enrolling for sophomore year were .248 of

the odds of a student with more than $6,000 in institutional grants; the odds of a student with up to $1,000 in institutional grants enrolling for sophomore year were .263 of the odds of a student with more than $6,000 in institutional grants; and the odds of a student with $1,001-$2,000 in institutional grants enrolling for sophomore year were .288 of the odds of a student more with than $6,000 in institutional grants.

### 4.1.2 Persistence to Junior Year

A database with a total of 749 students was created to obtain the results for this question. Of the 749 students enrolled for their sophomore year, 622 students returned for their junior year. Conversely, 127 students did *not* return for their junior year.

To break those numbers down further, 168 of the 749 students borrowed private student loans in their sophomore year. Thirty-four of those private student loan borrowers did not return for their junior year. Below is a cross-tabulation table that illustrates the persistence difference from sophomore to junior year between private student loan borrowers and non-borrowers.

**Table 16.** Cross-tabulation Table for Question 1, Persistence to Junior Year

| | **Borrower Status as Sophomore** | | | |
|---|---|---|---|---|
| **Enrollment Status as Junior** | | Non-Borrower | Borrower | Total |
| | Not Enrolled | 93 | 34 | 127 |
| | Enrolled | 488 | 134 | 622 |
| | Total | 581 | 168 | 749 |

Data were further analyzed using the binary logistic regression feature of SPSS. Junior enrollment was coded as the dependent variable; while SAT score, high school GPA, sophomore year GPA, family income, race, gender, parent education level, sophomore federal student loans, sophomore institutional grants and sophomore private student loan borrower status were coded as the independent variables. The dependent and independent variables were used to build the set referenced in the research question.

For this particular set of variables, the chi-square value of the Hosmer and Lemeshow Goodness of Fit Test was 5.149 with 8 degrees of freedom and a significance level of .742. The significance level of this set of variables, at .742, suggests has goodness of fit. The following table summarizes the statistics related to the Hosmer and Lemeshow Test.

**Table 17.** Hosmer and Lemeshow Test for Question 1, Persistence to Junior Year

| **Chi-Square** | **df** | **Sig.** |
|---|---|---|
| 5.149 | 8 | .742 |

As noted previously, SPSS also measured the predictive ability of the set of variables by classifying each case (student) without using any independent variables. SPSS correctly classified 83% of the cases without any independent variables. Overall, the set of variables correctly predicted persistence to junior year in 85.1% of the cases, an improvement over the classification without any independent variable. The following table shows a breakdown of the classification using the independent variables. Once again, the set of variables was highly successful (97.4%) in predicting students who enrolled for their sophomore year, but much less successful (25.2%) in predicting students who did not enroll.

**Table 18.** Classification Table for Question 1, Persistence to Junior Year

| Observed | | Predicted | | |
|---|---|---|---|---|
| | | Enrollment Status as Junior | | |
| | | Not Enrolled | Enrolled | Percentage Correct |
| **Enrollment Status as Junior** | Not Enrolled | 32 | 95 | 25.2 |
| | Enrolled | 16 | 603 | 97.4 |
| | Overall Percentage | | | 85.1 |

Like the previous set of variables, this set passed the goodness of fit test even though all of the independent variables did not contribute significantly to the predictive nature of the set. Only sophomore year GPA (.000), sophomore institutional grants (.031) and sophomore federal student loans (.016) had a Wald level of significance less than .05, indicating significant level of contribution. Private student loan borrower status (.539) again did not contribute to the predictive nature of the set of variables. Following is a complete list of the Wald statistics for each of the independent variables.

**Table 19.** Variables in the Equation for Question 1, Persistence to Junior Year

| | B | S.E. | Wald | df | Sig. | Ex(B) |
|---|---|---|---|---|---|---|
| SophomoreBorrower Status(1) | .063 | .267 | .057 | 1 | .812 | 1.066 |
| HSGPA | .189 | .287 | .433 | 1 | .510 | 1.208 |
| SAT | | | 9.680 | 5 | .085 | |
| SAT(1) | .074 | .869 | .007 | 1 | .932 | 1.077 |
| SAT(2) | .406 | .851 | .228 | 1 | .633 | 1.501 |
| SAT(3) | -.280 | .827 | .114 | 1 | .735 | .756 |
| SAT(4) | -.380 | .826 | .211 | 1 | .646 | .684 |
| SAT(5) | -.885 | .845 | 1.099 | 1 | .295 | .413 |
| SophomoreGPA | 1.248 | .263 | 22.454 | 1 | .000 | 3.482 |
| FamilyIncome | | | 8.077 | 9 | .526 | |
| FamilyIncome(1) | -.639 | .621 | 1.059 | 1 | .303 | .528 |
| FamilyIncome(2) | -.317 | .734 | .186 | 1 | .666 | .729 |
| FamilyIncome(3) | -.676 | .465 | 2.115 | 1 | .146 | .509 |
| FamilyIncome(4) | -1.013 | .420 | 5.815 | 1 | .016 | .363 |
| FamilyIncome(5) | -.063 | .504 | .015 | 1 | .901 | .939 |
| FamilyIncome(6) | -.403 | .440 | .838 | 1 | .360 | .668 |
| FamilyIncome(7) | -.568 | .415 | 1.878 | 1 | .171 | .566 |
| FamilyIncome(8) | -.513 | .409 | 1.572 | 1 | .210 | .599 |
| FamilyIncome(9) | .043 | .564 | .006 | 1 | .939 | 1.044 |
| Race(1) | -.407 | .366 | 1.240 | 1 | .265 | .665 |
| Gender(1) | .039 | .250 | .024 | 1 | .876 | 1.040 |
| ParentEdLevel | | | .690 | 2 | .708 | |
| ParentEdLevel(1) | .163 | .417 | .152 | 1 | .696 | 1.177 |
| ParentEdLevel(2) | -.046 | .418 | .012 | 1 | .913 | .955 |
| SophInstGrants | | | 15.436 | 7 | .031 | |
| SophInstGrants(1) | -.802 | .442 | 3.292 | 1 | .070 | .449 |
| SophInstGrants(2) | -1.369 | .463 | 8.752 | 1 | .003 | .254 |
| SophInstGrants(3) | -.288 | .449 | .411 | 1 | .521 | .750 |
| SophInstGrants(4) | .018 | .445 | .002 | 1 | .967 | 1.019 |
| SophInstGrants(5) | -.282 | .477 | .350 | 1 | .554 | .754 |
| SophInstGrants(6) | -.113 | .554 | .041 | 1 | .839 | .894 |
| SophInstGrants(7) | .938 | 1.087 | .745 | 1 | .388 | 2.555 |
| SophFederalLoans | | | 8.241 | 2 | .016 | |
| SophFederalLoans(1) | -1.237 | .446 | 7.684 | 1 | .006 | .290 |
| SophFederalLoans(2) | -1.059 | .399 | 7.025 | 1 | .008 | .347 |
| Constant | -.571 | 1.569 | .132 | 1 | .716 | .565 |

Three variables had significant odds ratios: sophomore year GPA, sophomore institutional grants and sophomore federal loans.

*Interpretation for odds ratios:*

- Sophomore year GPA—For every one unit increase in sophomore year GPA, the odds of enrolling for junior year increase 3.482 when controlling for other variables.
- Sophomore year institutional grants—As a categorical variable, "$6,001 and above" was used as the reference value. Note that only the second value (up to $1,000) had significant Wald values. The odds of a student with up to $1,000 in institutional grants enrolling for junior year were .263 of the odds of a student with more than $6,000 in institutional grants when controlling for other variables.
- Sophomore federal loans—As a categorical variable, "$3,500 and above" was used as the reference value. When controlling for other variables, the odds of a student with no federal loans enrolling for junior year were .290 of the odds of a student with more than $3,500 in federal loans; the odds of a student with up to $3,500 in federal loans were .347 of the odds of a student with more than $3,500 in federal student loans.

### 4.1.3 Persistence to Senior Year

A database with a total of 613 students was created to obtain the results for this question. As noted in the previous section, 622 enrolled for their junior year. Of those, 578 students returned for their senior year, while 35 students did *not* return for their senior year. Eight students graduated prior to their senior year, so they were removed from this analysis.

To break those numbers down further, 151 of the 613 students borrowed private student loans in their junior year. Eleven of those private student loan borrowers did not return for their

senior year. Below is a cross-tabulation table that illustrates the persistence difference from junior to senior year between private student loan borrowers and non-borrowers.

**Table 20.** Cross-tabulation Table for Question 1, Persistence to Senior Year

| **Enrollment Status as Senior** | **Borrower Status as Junior** | | | |
|---|---|---|---|---|
| | | Non-Borrower | Borrower | Total |
| | Not Enrolled | 24 | 11 | 35 |
| | Enrolled | 438 | 140 | 578 |
| | Total | 462 | 151 | 613 |

Data were further analyzed using the binary logistic regression feature of SPSS. Senior enrollment was coded as the dependent variable; while SAT score, high school GPA, junior year GPA, family income, race, gender, parent education level, junior federal student loans, junior institutional grants and junior private student loan borrower status were coded as the independent variables.

The chi-square value of the Hosmer and Lemeshow Goodness of Fit Test was 25.843 with 8 degrees of freedom and a significance level of .001. The significance level of this set of variables is low and suggests it does not have goodness of fit. The following table summarizes the statistics related to the Hosmer and Lemeshow Test.

**Table 21.** Hosmer and Lemeshow Test for Question 1, Persistence to Senior Year

| **Chi-Square** | **df** | **Sig.** |
|---|---|---|
| 25.483 | 8 | .001 |

SPSS correctly classified 94.3% of the cases without any independent variables. Overall, the set of variables correctly predicted persistence to senior year in 94.6% of the cases, only a very slight improvement over the classification without any independent variable. The following table shows a breakdown of the classification using the independent variables. The set of variables had little success in predicting students who did not enroll—only 17.1% success rate.

**Table 22.** Classification Table for Question 1, Persistence to Senior Year

| **Observed** | | **Predicted** | | |
|---|---|---|---|---|
| | | **Enrollment Status as Senior** | | |
| | | Not Enrolled | Enrolled | Percentage Correct |
| **Enrollment Status as Senior** | Not Enrolled | 6 | 29 | 17.1 |
| | Enrolled | 4 | 574 | 94.6 |
| | Overall Percentage | | | 94.6 |

### 4.1.4 Persistence to Fifth Year

A database with a total of 282 students was created to obtain the results for this question. As noted in the previous section, 578 enrolled for their senior year. Of those, 262 students returned for their fifth year, while 20 students did *not* return for their fifth year. Two hundred ninety-six students graduated prior to their fifth year, so they were removed from this analysis.

To break those numbers down further, 99 of the 282 students borrowed private student loans in their senior year. Seven of those private student loan borrowers did not return for their

fifth year and also did not graduate. Below is a cross-tabulation table that illustrates the persistence difference between private student loan borrowers and non-borrowers.

**Table 23.** Cross-tabulation Table for Question 1, Persistence to Fifth Year

| | **Borrower Status as Senior** | | | |
|---|---|---|---|---|
| **Enrollment Status as Fifth Year** | | Non-Borrower | Borrower | Total |
| | Not Enrolled | 13 | 7 | 20 |
| | Enrolled | 170 | 92 | 262 |
| | Total | 183 | 99 | 282 |

Data were further analyzed using the binary logistic regression feature of SPSS. Fifth year enrollment was coded as the dependent variable; while SAT score, high school GPA, senior year GPA, family income, race, gender, parent education level, senior federal student loans, senior institutional grants and senior private student loan borrower status were coded as the independent variables.

For this particular set of variables, the chi-square value of the Hosmer and Lemeshow Goodness of Fit Test was 5.838 with 8 degrees of freedom and a significance level of .665. The significance level suggests it has goodness of fit. The following table summarizes the statistics related to the Hosmer and Lemeshow Test.

**Table 24.** Hosmer and Lemeshow Test for Question 1, Persistence to Fifth Year

| **Chi-Square** | **df** | **Sig.** |
|---|---|---|
| 5.838 | 8 | .665 |

SPSS correctly classified 92.9% of the cases without any independent variables. Overall, the set of independent variables correctly predicted persistence to fifth year in 94.3% of the cases, which is an improvement over the classification without any independent variable. The following table shows a breakdown of the classification using the independent variables. As with some of the other sets, it was able to correctly predict enrolled students (99.6%) with a much higher level of accuracy than students not enrolled (25%).

**Table 25.** Classification Table for Question 1, Persistence to Fifth Year

| **Observed** | | **Predicted** | | |
|---|---|---|---|---|
| | | **Enrollment Status as Fifth Year** | | |
| | | Not Enrolled | Enrolled | Percentage Correct |
| **Enrollment Status as Fifth Year** | Not Enrolled | 5 | 15 | 25 |
| | Enrolled | 1 | 261 | 99.6 |
| | Overall Percentage | | | 94.3 |

This model also passed the goodness of fit test even though no individual variables had a Wald level of significance less than .05, indicating significant level of contribution to the model. The three variables that contributed most significantly, though not statistically significant, were senior year GPA (.053), race (.057) and gender (.053). As with the other two scenarios, private student loan borrower status (.421) did not contribute to the predictive nature of the model. Following is a complete list of the Wald statistics for each of the independent variables.

**Table 26.** Variables in the Equation for Question 1, Persistence to Fifth Year

| | B | S.E. | Wald | df | Sig. | Ex(B) |
|---|---|---|---|---|---|---|
| SeniorBorrower Status(1) | -.555 | .689 | .649 | 1 | .421 | .574 |
| HSGPA | -.435 | .621 | .489 | 1 | .484 | .648 |
| SAT | | | 4.285 | 5 | .509 | |
| SAT(1) | -17.195 | 8421.875 | .000 | 1 | .998 | .000 |
| SAT(2) | -18.649 | 8421.875 | .000 | 1 | .998 | .000 |
| SAT(3) | -17.305 | 8421.875 | .000 | 1 | .998 | .000 |
| SAT(4) | -17.659 | 8421.875 | .000 | 1 | .998 | .000 |
| SAT(5) | -18.788 | 8421.875 | .000 | 1 | .998 | .000 |
| SeniorGPA | 1.432 | .741 | 3.728 | 1 | .053 | 4.186 |
| FamilyIncome | | | 2.587 | 9 | .978 | |
| FamilyIncome(1) | 20.282 | 9507.944 | .000 | 1 | .998 | 6.432E8 |
| FamilyIncome(2) | 17.897 | 12832.340 | .000 | 1 | .999 | 5.925E7 |
| FamilyIncome(3) | -.961 | 1.034 | .863 | 1 | .353 | .383 |
| FamilyIncome(4) | 19.114 | 7070.639 | .000 | 1 | .998 | 2.000E8 |
| FamilyIncome(5) | -.331 | 1.086 | .093 | 1 | .760 | .718 |
| FamilyIncome(6) | -.770 | 1.104 | .487 | 1 | .485 | .463 |
| FamilyIncome(7) | .512 | 1.135 | .204 | 1 | .652 | 1.669 |
| FamilyIncome(8) | .111 | 1.167 | .009 | 1 | .924 | 1.117 |
| FamilyIncome(9) | -.675 | 1.241 | .295 | 1 | .587 | .509 |
| Race(1) | -1.820 | .956 | 3.625 | 1 | .057 | .162 |
| Gender(1) | 1.256 | .650 | 3.733 | 1 | .053 | 3.513 |
| ParentEdLevel | | | 1.576 | 2 | .455 | |
| ParentEdLevel(1) | .539 | 1.311 | .169 | 1 | .681 | 1.715 |
| ParentEdLevel(2) | -.377 | 1.265 | .089 | 1 | .766 | .686 |
| SeniorInstGrants | | | 9.214 | 7 | .238 | |
| SeniorInstGrants(1) | -2.970 | 1.381 | 4.623 | 1 | .032 | .051 |
| SeniorInstGrants(2) | -1.571 | 1.531 | 1.054 | 1 | .305 | .208 |
| SeniorInstGrants(3) | -1.736 | 1.443 | 1.447 | 1 | .229 | .176 |
| SeniorInstGrants(4) | -.076 | 1.597 | .002 | 1 | .962 | .927 |
| SeniorInstGrants(5) | -1.196 | 1.740 | .472 | 1 | .492 | .302 |
| SeniorInstGrants(6) | 16.954 | 7786.721 | .000 | 1 | .998 | 2.307E7 |
| SeniorInstGrants(7) | -3.971 | 1.939 | 4.194 | 1 | .041 | .019 |
| SeniorFederalLoans | | | 2.323 | 2 | .313 | |
| SenniorFederalLoans(1) | -1.635 | 1.416 | 1.335 | 1 | .248 | .195 |
| SeniorFederalLoans(2) | -2.030 | 1.352 | 2.254 | 1 | .133 | .131 |
| Constant | 21.351 | 8421.876 | .000 | 1 | .998 | 1.873E9 |

### 4.1.5 Persistence to Sixth Year

A database with a total of 90 students was created to obtain the results for this question. As noted in the previous section, 262 enrolled for their fifth year. Of those, 63 students returned for their sixth year, while 27 students did *not* return for their sixth year. One hundred seventy-two students graduated prior to their sixth year, so they were removed from this analysis.

To break those numbers down further, 37 of the 90 students borrowed private student loans in their fifth year. Nine of those private student loan borrowers did not return for their sixth year and also did not graduate. Below is a cross-tabulation table that illustrates the persistence difference between private student loan borrowers and non-borrowers.

**Table 27.** Cross-tabulation Table for Question 1, Persistence to Sixth Year

| | **Borrower Status as Fifth Year** | | | |
|---|---|---|---|---|
| **Enrollment Status as Sixth Year** | | Non-Borrower | Borrower | Total |
| | Not Enrolled | 18 | 9 | 27 |
| | Enrolled | 35 | 28 | 63 |
| | Total | 53 | 37 | 90 |

Data were further analyzed using the binary logistic regression feature of SPSS. Sixth year enrollment was coded as the dependent variable; while SAT score, high school GPA, fifth year GPA, family income, race, gender, parent education level, fifth year federal student loans, fifth year institutional grants and fifth year private student loan borrower status were coded as the independent variables.

The chi-square value of the Hosmer and Lemeshow Goodness of Fit Test was 9.907 with 8 degrees of freedom and a significance level of .279. The significance level suggests the set of variables has goodness of fit. The following table summarizes the statistics related to the Hosmer and Lemeshow Test.

**Table 28.** Hosmer and Lemeshow Test for Question 1, Persistence to Sixth Year

| **Chi-Square** | **df** | **Sig.** |
|---|---|---|
| 9.807 | 8 | .279 |

SPSS was able to correctly classify 70% of the cases without any independent variables. Overall, the set of variables correctly predicted persistence to sixth year in 87.8% of the cases, which is an improvement over the classification without any independent variable. The following table shows a breakdown of the classification using the independent variables. The set was more successful than previous sests in predicting *both* enrolled (95.2%) and not enrolled (70.4%) students.

**Table 29.** Classification Table for Question 1, Persistence to Sixth Year

| Observed | | Predicted | | |
|---|---|---|---|---|
| | | Enrollment Status as Fifth Year | | |
| | | Not Enrolled | Enrolled | Percentage Correct |
| **Enrollment Status as Fifth Year** | Not Enrolled | 19 | 8 | 70.4 |
| | Enrolled | 3 | 60 | 95.2 |
| | Overall Percentage | | | 87.8 |

This set of variables passed the goodness of fit test, although only two of the independent variables contributed significantly to the predictive nature of the set. Only fifth year GPA (.031) and fifth year federal student loans (.028) had a Wald level of significance less than .05, indicating significant level of contribution to the model. Private student loan borrower status (.139) again did not contribute to the predictive nature of the set. Following is a complete list of the Wald statistics for each of the independent variables.

**Table 30.** Variables in the Equation for Question 1, Persistence to Sixth Year

| | B | S.E. | Wald | df | Sig. | Ex(B) |
|---|---|---|---|---|---|---|
| FifthBorrower Status(1) | -1.299 | .879 | 2.186 | 1 | .139 | .273 |
| HSGPA | -2.446 | 1.372 | 3.180 | 1 | .075 | .087 |
| SAT | | | 5.155 | 5 | .397 | |
| SAT(1) | 17.275 | 9546.589 | .000 | 1 | .999 | 3.181E7 |
| SAT(2) | 16.883 | 9546.589 | .000 | 1 | .999 | 2.149E7 |
| SAT(3) | 14.817 | 9546.589 | .000 | 1 | .999 | 2721153.149 |
| SAT(4) | 18.005 | 9546.589 | .000 | 1 | .998 | 6.597E7 |
| SAT(5) | 18.415 | 9546.589 | .000 | 1 | .998 | 9.941E7 |
| FifthGPA | 3.167 | 1.465 | 4.677 | 1 | .031 | 23.746 |
| FamilyIncome | | | 7.504 | 9 | .585 | |
| FamilyIncome(1) | -3.872 | 2.053 | 3.559 | 1 | .059 | .021 |
| FamilyIncome(2) | 17.540 | 19621.970 | .000 | 1 | .999 | 4.145E7 |
| FamilyIncome(3) | -1.484 | 1.799 | .680 | 1 | .409 | .227 |
| FamilyIncome(4) | .044 | 1.913 | .001 | 1 | .982 | 1.045 |
| FamilyIncome(5) | -.870 | 1.506 | .334 | 1 | .564 | .419 |
| FamilyIncome(6) | -2.027 | 1.639 | 1.530 | 1 | .216 | .132 |
| FamilyIncome(7) | -1.742 | 1.680 | 1.074 | 1 | .300 | .175 |
| FamilyIncome(8) | 2.473 | 2.241 | 1.218 | 1 | .270 | 11.858 |
| FamilyIncome(9) | -1.820 | 2.087 | .761 | 1 | .383 | .162 |
| Race(1) | -2.389 | 1.355 | 3.108 | 1 | .078 | .092 |
| Gender(1) | -1.999 | 1.059 | 3.562 | 1 | .059 | .135 |
| ParentEdLevel | | | 3.469 | 2 | .176 | |
| ParentEdLevel(1) | -3.917 | 2.130 | 3.382 | 1 | .066 | .020 |
| ParentEdLevel(2) | -3.086 | 2.095 | 2.169 | 1 | .141 | .046 |
| FifthInstGrants | | | .000 | 4 | 1.000 | |
| FifthInstGrants(1) | -38.372 | 12976.278 | .000 | 1 | .998 | .000 |
| FifthInstGrants(2) | -19.347 | 27123.078 | .000 | 1 | .999 | .000 |
| FifthInstGrants(3) | -59.136 | 42235.751 | .000 | 1 | .999 | .000 |
| FifthInstGrants(4) | -24.984 | 42235.751 | .000 | 1 | 1.000 | .000 |
| FifthFederalLoans | | | 7.121 | 2 | .028 | |
| FifthFederalLoans(1) | -5.449 | 2.317 | 5.533 | 1 | .019 | .004 |
| FifthFederalLoans(2) | -2.977 | 1.979 | 2.262 | 1 | .133 | .051 |
| Constant | 31.814 | 8788.996 | .000 | 1 | .997 | 6.559E13 |

Two variables had significant odds ratios: fifth year GPA and fifth year federal loans.

*Interpretation for odds ratios:*

- Fifth year GPA—For every one unit increase in fifth year GPA, the odds of a student enrolling for a sixth year increased 23.746 when controlling for other variables.
- Fifth year federal loans—As a categorical variable, "$5,500 and above" was used as the reference value. When controlling for other variables, the odds of a student with no federal loans enrolling for a sixth year were .004 of the odds of a student with more than $5,500 in federal loans.

## 4.2 RESEARCH QUESTION 2

*Does a statistically significant relationship exist between the dollar amount of private student loans borrowed annually and the persistence status of traditional students at a private, four-year university, while controlling for a group of selected independent variables?*

### 4.2.1 Persistence to Sophomore Year

A total of 988 students enrolled for their freshmen year. Of that group, 749 students returned for their sophomore year, while 239 students did *not* return for their sophomore year.

Additionally, 146 students borrowed private student loans in their freshmen year. The amount of private student loans borrowed by each student varied greatly, ranging from $900 to $20,410 for the year. The average private student loan amount amongst the 146 borrowers was $7,321.

Data were further analyzed using the binary logistic regression feature of SPSS. Sophomore enrollment was coded as the dependent variable; while SAT score, high school GPA, freshman year GPA, family income, race, gender, parent education level, freshman federal student loans, freshman institutional grants and annual amount of private student loans borrowed were coded as the independent variables.

The chi-square value of the Hosmer and Lemeshow Goodness of Fit Test was 3.920 with 8 degrees of freedom and a significance level of .864. The significance level of this set of variables suggests it has goodness of fit. The following table summarizes the statistics related to the Hosmer and Lemeshow Test.

**Table 31.** Hosmer and Lemeshow Test for Question 2, Persistence to Sophomore Year

| **Chi-Square** | **df** | **Sig.** |
|---|---|---|
| 3.920 | 8 | .864 |

In this set of variables, SPSS was able to correctly classify 75.8% of the cases without any independent variables. Overall, the set correctly predicted persistence to sophomore year in 80.1% of the cases, an improvement over the classification without any independent variable. The following table shows a breakdown of the classification using the independent variables. Much like the sets in the previous research question, this set of variables was very accurate in predicting enrolled students (96.1%) but much less accurate in predicting students not enrolled (31.8%).

**Table 32.** Classification Table for Question 2, Persistence to Sophomore Year

| Observed | | Predicted | | |
|---|---|---|---|---|
| | | Enrollment Status as Sophomore | | |
| | | Not Enrolled | Enrolled | Percentage Correct |
| **Enrollment Status as Sophomore** | Not Enrolled | 76 | 163 | 31.8 |
| | Enrolled | 29 | 720 | 96.1 |
| | Overall Percentage | | | 80.6 |

Like the previous set of variables, this set passed the goodness of fit test even though all of the independent variables did not contribute significantly to the predictive nature. Only SAT score (.042), freshman year GPA (.000), gender (.046) and institutional grants (.000) had a Wald level of significance less than .05, indicating significant level of contribution. Annual private student loan amount borrowed (.662) did not contribute to the predictive nature of the set. Following is a complete list of the Wald statistics for each of the independent variables.

**Table 33.** Variables in the Equation for Question 2, Persistence to Sophomore Year

| | B | S.E. | Wald | df | Sig. | Ex(B) |
|---|---|---|---|---|---|---|
| FreshPrivateLoans | | | 1.589 | 3 | .662 | |
| FreshPrivateLoans(1) | -.151 | .432 | .123 | 1 | .726 | .860 |
| FreshPrivateLoans(2) | -.449 | .557 | .650 | 1 | .420 | .639 |
| FreshPrivateLoans(3) | -.484 | .539 | .807 | 1 | .369 | .616 |
| HSGPA | -.390 | .242 | 2.610 | 1 | .106 | .677 |
| SAT | | | 11.496 | 5 | .042 | |
| SAT(1) | 1.212 | .670 | 3.270 | 1 | .071 | 3.360 |
| SAT(2) | .637 | .640 | .991 | 1 | .319 | 1.892 |
| SAT(3) | .369 | .625 | .349 | 1 | .555 | 1.447 |
| SAT(4) | .099 | .624 | .025 | 1 | .875 | 1.104 |
| SAT(5) | .400 | .683 | .343 | 1 | .558 | 1.492 |
| FreshmanGPA | 1.385 | .143 | 94.412 | 1 | .000 | 3.994 |
| FamilyIncome | | | 8.606 | 9 | .474 | |
| FamilyIncome(1) | .849 | .635 | 1.787 | 1 | .181 | 2.337 |
| FamilyIncome(2) | -.031 | .515 | .004 | 1 | .952 | .969 |
| FamilyIncome(3) | -.143 | .355 | .161 | 1 | .688 | .867 |
| FamilyIncome(4) | -.268 | .340 | .619 | 1 | .431 | .765 |
| FamilyIncome(5) | -.470 | .349 | 1.813 | 1 | .178 | .625 |
| FamilyIncome(6) | -.349 | .330 | 1.114 | 1 | .291 | .705 |
| FamilyIncome(7) | .089 | .339 | .069 | 1 | .792 | 1.094 |
| FamilyIncome(8) | .254 | .362 | .494 | 1 | .482 | 1.290 |
| FamilyIncome(9) | -.401 | .382 | 1.099 | 1 | .294 | .670 |
| Race(1) | -.287 | .287 | 1.001 | 1 | .317 | .750 |
| Gender(1) | .384 | .193 | 3.971 | 1 | .046 | 1.468 |
| ParentEdLevel | | | 2.697 | 2 | .260 | |
| ParentEdLevel(1) | -.502 | .406 | 1.533 | 1 | .216 | .605 |
| ParentEdLevel(2) | -.647 | .406 | 2.542 | 1 | .111 | .524 |
| FreshInstGrants | | | 29.271 | 7 | .000 | |
| FreshInstGrants(1) | -1.393 | .433 | 10.345 | 1 | .001 | .248 |
| FreshInstGrants(2) | -1.315 | .410 | 10.278 | 1 | .001 | .269 |
| FreshInstGrants(3) | -1.252 | .357 | 12.330 | 1 | .000 | .286 |
| FreshInstGrants(4) | -.235 | .360 | .424 | 1 | .515 | .791 |
| FreshInstGrants(5) | -.423 | .389 | 1.188 | 1 | .276 | .655 |
| FreshInstGrants(6) | .094 | .443 | .045 | 1 | .832 | 1.099 |
| FreshInstGrants(7) | -.180 | .598 | .090 | 1 | .764 | .836 |
| FreshFederalLoans | | | 2.369 | 2 | .306 | |
| FreshFederalLoans(1) | -.345 | .307 | 1.257 | 1 | .262 | .709 |
| FreshFederalLoans(2) | .055 | .224 | .059 | 1 | .807 | 1.056 |
| Constant | -.336 | 1.283 | .069 | 1 | .793 | .715 |

Of the four independent variables that contributed significantly, three had individual values with significant odds ratios: freshman year GPA, gender and freshman year institutional grants. The Wald levels of significance for the SAT score individual values (labeled 1-5) were shown to be at insignificant levels (.071, .319, .555, .875, .558).

*Interpretation for odds ratios:*

- Freshman year GPA—For every one unit increase in freshman year GPA, the odds of a student enrolling for sophomore year increase 3.994 when controlling for other variables.
- Gender—As a categorical variable, the odds ratio was calculated using "female" as the reference value. Therefore, the odds of a male student enrolling for sophomore year were 1.468 greater than the odds of a female student enrolling for sophomore year when controlling for other variables.
- Freshman year institutional grants—As a categorical variable, "$6,001 and above" was used as the reference value. Note that only the first three values ($0, up to $1,000, $1,001-$2,000) had significant Wald values. When controlling for other variables, the odds of a student with no institutional grants enrolling for sophomore year were .248 of the odds of a student with more than $6,000 in institutional grants; the odds of a student with up to $1,000 in institutional grants enrolling for sophomore year were .269 of the odds of a student with more than $6,000 in institutional grants; and the odds of a student with $1,001-$2,000 in institutional grants enrolling for sophomore year were .286 of the odds of a student more with than $6,000 in institutional grants.

### 4.2.2 Persistence to Junior Year

A total of 749 students enrolled for their sophomore year. Of that group, 622 students returned for their junior year, while 127 students did *not* return for their junior year.

Additionally, 168 students borrowed private student loans in their sophomore year. The amount of private student loans borrowed by each student varied greatly, ranging from $650 to $22,000 for the year. The average private student loan amount amongst the 168 borrowers was $8,410.

Data were further analyzed using the binary logistic regression feature of SPSS. Junior enrollment was coded as the dependent variable; while SAT score, high school GPA, sophomore year GPA, family income, race, gender, parent education level, sophomore federal student loans, sophomore institutional grants and annual amount of private student loans borrowed were coded as the independent variables.

The chi-square value of the Hosmer and Lemeshow Goodness of Fit Test was 3.90 with 8 degrees of freedom and a significance level of .884. The significance level of this set of variables suggests that it has goodness of fit. The following table summarizes the statistics related to the Hosmer and Lemeshow Test.

**Table 34.** Hosmer and Lemeshow Test for Question 2, Persistence to Junior Year

| Chi-Square | df | Sig. |
|---|---|---|
| 3.690 | 8 | .884 |

In this set of variables, SPSS was able to correctly classify 83% of the cases without any independent variables. Overall, the set of variables correctly predicted persistence to sophomore

year in 85.2% of the cases, only a slight improvement over the classification without any independent variable. The following table shows a breakdown of the classification using the model's independent variables. Once again, the set of variables was far more accurate in predicting enrolled students (97.3%) versus students not enrolled (26%).

**Table 35.** Classification Table for Question 2, Persistence to Junior Year

| **Observed** | | **Predicted** | | |
|---|---|---|---|---|
| | | **Enrollment Status as Junior** | | |
| | | Not Enrolled | Enrolled | Percentage Correct |
| **Enrollment Status as Junior** | Not Enrolled | 33 | 94 | 26.0 |
| | Enrolled | 17 | 605 | 97.3 |
| | Overall Percentage | | | 85.2 |

This set of variables passed the goodness of fit test even though all of the independent variables did not contribute significantly to the predictive nature of the set. Only sophomore year GPA (.000), sophomore federal student loans (.016) and sophomore institutional grants (.030) had a Wald level of significance less than .05, indicating significant level of contribution. Annual private student loan amount borrowed (.329) did not contribute to the predictive nature of the set. Following is a complete list of the Wald statistics for each of the independent variables.

**Table 36.** Variables in the Equation for Question 2, Persistence to Junior Year

| | B | S.E. | Wald | df | Sig. | Ex(B) |
|---|---|---|---|---|---|---|
| SophPrivateLoans | | | 3.438 | 3 | .329 | |
| SophPrivateLoans(1) | -.515 | .441 | 1.364 | 1 | .243 | .597 |
| SophPrivateLoans(2) | -.727 | .577 | 1.585 | 1 | .208 | .484 |
| SophPrivateLoans(3) | -.987 | .554 | 3.173 | 1 | .075 | .373 |
| HSGPA | .149 | .288 | .268 | 1 | .605 | 1.160 |
| SAT | | | 9.293 | 5 | .098 | |
| SAT(1) | .059 | .876 | .005 | 1 | .946 | 1.061 |
| SAT(2) | .391 | .859 | .207 | 1 | .649 | 1.479 |
| SAT(3) | -.283 | .834 | .115 | 1 | .735 | .754 |
| SAT(4) | -.408 | .834 | .239 | 1 | .625 | .665 |
| SAT(5) | -.868 | .853 | 1.035 | 1 | .309 | .420 |
| SophomoreGPA | 1.302 | .267 | 23.783 | 1 | .000 | 3.676 |
| FamilyIncome | | | 7.903 | 9 | .544 | |
| FamilyIncome(1) | -.693 | .624 | 1.232 | 1 | .267 | .500 |
| FamilyIncome(2) | -.362 | .728 | .248 | 1 | .619 | .696 |
| FamilyIncome(3) | -.672 | .466 | 2.077 | 1 | .149 | .511 |
| FamilyIncome(4) | -1.002 | .427 | 5.503 | 1 | .019 | .367 |
| FamilyIncome(5) | -.078 | .506 | .024 | 1 | .877 | .925 |
| FamilyIncome(6) | -.399 | .444 | .807 | 1 | .369 | .671 |
| FamilyIncome(7) | -.594 | .418 | 2.018 | 1 | .155 | .552 |
| FamilyIncome(8) | -.570 | .412 | 1.912 | 1 | .167 | .565 |
| FamilyIncome(9) | .020 | .566 | .001 | 1 | .972 | 1.020 |
| Race(1) | -.392 | .367 | 1.138 | 1 | .286 | .676 |
| Gender(1) | .020 | .252 | .006 | 1 | .938 | 1.020 |
| ParentEdLevel | | | .525 | 2 | .769 | |
| ParentEdLevel(1) | .097 | .418 | .053 | 1 | .818 | 1.101 |
| ParentEdLevel(2) | -.089 | .419 | .045 | 1 | .833 | .915 |
| SophInstGrants | | | 15.528 | 7 | .030 | |
| SophInstGrants(1) | -.878 | .443 | 3.932 | 1 | .047 | .416 |
| SophInstGrants(2) | -1.378 | .463 | 8.875 | 1 | .003 | .252 |
| SophInstGrants(3) | -.312 | .448 | .486 | 1 | .486 | .732 |
| SophInstGrants(4) | -.014 | .445 | .001 | 1 | .974 | .986 |
| SophInstGrants(5) | -.269 | .479 | .316 | 1 | .574 | .764 |
| SophInstGrants(6) | -.172 | .557 | .095 | 1 | .758 | .842 |
| SophInstGrants(7) | .880 | 1.089 | .654 | 1 | .419 | 2.412 |
| SophFederalLoans | | | 8.289 | 2 | .016 | |
| SophFederalLoans(1) | -1.249 | .446 | 7.847 | 1 | .005 | .287 |
| SophFederalLoans(2) | -1.042 | .398 | 6.853 | 1 | .009 | .353 |
| Constant | .097 | 1.618 | .004 | 1 | .952 | 1.102 |

Three variables had significant odds ratios: sophomore year GPA, sophomore institutional grants and sophomore federal loans.

*Interpretation for odds ratios:*

- Sophomore year GPA—For every one unit increase in sophomore year GPA, the odds of a student enrolling for junior year increase 3.676 when controlling for other variables.
- Sophomore year institutional grants—As a categorical variable, "$6,001 and above" was used as the reference value. Note that only the first ($0) and second value (up to $1,000) had significant Wald values. When controlling for other variables, the odds of a student with no institutional grants enrolling for junior year were .416 of the odds of a student with more than $6,000 in institutional grants; the odds of a student with up to $1,000 in institutional grants enrolling for junior year were .252 of the odds of a student with more than $6,000 in institutional grants.
- Sophomore federal loans—As a categorical variable, "$3,500 and above" was used as the reference value. When controlling for other variables, the odds of a student with no federal loans enrolling for junior year were .287 of the odds of a student with more than $3,500 in federal loans; the odds of a student with up to $3,500 in federal loans were .353 of the odds of a student with more than $3,500 in federal student loans.

### 4.2.3 Persistence to Senior Year

A total of 622 students enrolled for their junior year. Of that group, 578 students returned for their sophomore year, while 35 students did *not* return for their sophomore year. Eight students graduated prior to their senior year, so they were removed from this analysis.

Additionally, 151 students borrowed private student loans in their junior year. The amount of private student loans borrowed by each student varied greatly, ranging from $716 to $28,440 for the year. The average private student loan amount amongst the 151 borrowers was $8,754.

Data were further analyzed using the binary logistic regression feature of SPSS. Senior enrollment was coded as the dependent variable; while SAT score, high school GPA, junior year GPA, family income, race, gender, parent education level, junior federal student loans, junior institutional grants and annual amount of private student loans borrowed were coded as the independent variables.

The chi-square value of the Hosmer and Lemeshow Goodness of Fit Test was 18.047 with 8 degrees of freedom and a significance level of .021. The significance level of this set of variables suggests that it does not have goodness of fit. The following table summarizes the statistics related to the Hosmer and Lemeshow Test.

**Table 37.** Hosmer and Lemeshow Test for Question 2, Persistence to Senior Year

| **Chi-Square** | **df** | **Sig.** |
|---|---|---|
| 18.047 | 8 | .021 |

SPSS was able to correctly classify 94.3% of the cases without any independent variables. Overall, the independent variables correctly predicted persistence to senior year in 95.6% of the cases, which was only a slight improvement over the classification without any independent variable. The following table shows a breakdown of the classification using the independent variables.

**Table 38.** Classification Table for Question 2, Persistence to Senior Year

| Observed | | Predicted | | |
|---|---|---|---|---|
| | | Enrollment Status as Senior | | |
| | | Not Enrolled | Enrolled | Percentage Correct |
| **Enrollment Status as Senior** | Not Enrolled | 11 | 24 | 31.4 |
| | Enrolled | 3 | 575 | 99.5 |
| | Overall Percentage | | | 95.6 |

### 4.2.4 Persistence to Fifth Year

A total of 578 students enrolled for their senior year. Of that group, 262 students returned for their fifth year, while 20 students did *not* return for their fifth year. Two hundred ninety-six students graduated prior to their fifth year, so they were removed from this analysis.

Additionally, 99 students borrowed private student loans in their senior year. The amount of private student loans borrowed by each student varied greatly, ranging from $1,000 to $25,705 for the year. The average private student loan amount amongst the 99 borrowers was $10,607.

Data were further analyzed using the binary logistic regression feature of SPSS. Fifth year enrollment was coded as the dependent variable; while SAT score, high school GPA, senior year GPA, family income, race, gender, parent education level, senior federal student loans, senior institutional grants and annual amount of private student loans borrowed were coded as the independent variables.

The chi-square value of the Hosmer and Lemeshow Goodness of Fit Test was 14.914 with 8 degrees of freedom and a significance level of .061. The significance level suggests it has goodness of fit. The following table summarizes the statistics related to the Hosmer and Lemeshow Test.

**Table 39.** Hosmer and Lemeshow Test for Question 2, Persistence to Fifth Year

| **Chi-Square** | **df** | **Sig.** |
|---|---|---|
| 14.914 | 8 | .061 |

SPSS was able to correctly classify 92.9% of the cases without any independent variables. Overall, the independent variables correctly predicted persistence to fifth year in 95.4% of the cases, an improvement over the classification without any independent variable. The following table shows a breakdown of the classification using the independent variables. As was the case with many of the previous sets, this set of variables was able to more accurately predict enrolled students (100%) versus students who did not enroll (35%).

**Table 40.** Classification Table for Question 2, Persistence to Fifth Year

| **Observed** | | **Predicted** | | |
|---|---|---|---|---|
| | | **Enrollment Status as Fifth Year** | | |
| | | Not Enrolled | Enrolled | Percentage Correct |
| **Enrollment Status as Fifth Year** | Not Enrolled | 7 | 13 | 35 |
| | Enrolled | 0 | 262 | 100 |
| | Overall Percentage | | | 95.4 |

This set of variables passed the goodness of fit test even though only two independent variables contributed significantly to the predictive nature of the set. Only senior year GPA (.047) and race (.035) had a Wald level of significance less than .05, indicating significant level of contribution to the set. Annual private student loan amount borrowed (.447) did not contribute to the predictive nature. Following is a complete list of the Wald statistics for each of the independent variables.

**Table 41.** Variables in the Equation for Question 2D

| | B | S.E. | Wald | df | Sig. | Ex(B) |
|---|---|---|---|---|---|---|
| SeniorPrivateLoans | | | 2.662 | 3 | .447 | |
| SeniorPrivateLoans(1) | -.914 | .950 | .925 | 1 | .336 | .401 |
| SeniorPrivateLoans(2) | .695 | 1.650 | .177 | 1 | .674 | 2.003 |
| SeniorPrivateLoans(3) | -1.330 | 1.187 | 1.255 | 1 | .263 | .265 |
| HSGPA | -.374 | .641 | .340 | 1 | .560 | .688 |
| SAT | | | 4.761 | 5 | .446 | |
| SAT(1) | -16.799 | 8382.903 | .000 | 1 | .998 | .000 |
| SAT(2) | -18.444 | 8382.903 | .000 | 1 | .998 | .000 |
| SAT(3) | -17.037 | 8382.903 | .000 | 1 | .998 | .000 |
| SAT(4) | -17.475 | 8382.903 | .000 | 1 | .998 | .000 |
| SAT(5) | -18.753 | 8382.903 | .000 | 1 | .998 | .000 |
| SeniorGPA | 1.473 | .743 | 3.929 | 1 | .047 | 4.364 |
| FamilyIncome | | | 3.373 | 9 | .948 | |
| FamilyIncome(1) | 20.425 | 9354.347 | .000 | 1 | .998 | 7.418E8 |
| FamilyIncome(2) | 17.773 | 12678.971 | .000 | 1 | .999 | 5.230E7 |
| FamilyIncome(3) | -1.071 | 1.135 | .890 | 1 | .345 | .343 |
| FamilyIncome(4) | 19.186 | 6942.104 | .000 | 1 | .998 | 2.150E8 |
| FamilyIncome(5) | -.445 | 1.114 | .160 | 1 | .689 | .641 |
| FamilyIncome(6) | -1.028 | 1.152 | .797 | 1 | .372 | .358 |
| FamilyIncome(7) | .668 | 1.150 | .338 | 1 | .561 | 1.951 |
| FamilyIncome(8) | .135 | 1.198 | .013 | 1 | .910 | 1.145 |
| FamilyIncome(9) | -.886 | 1.292 | .470 | 1 | .493 | .412 |
| Race(1) | -2.146 | 1.017 | 4.453 | 1 | .035 | .117 |
| Gender(1) | 1.196 | .664 | 3.243 | 1 | .072 | 3.308 |
| ParentEdLevel | | | 1.944 | 2 | .378 | |
| ParentEdLevel(1) | .873 | 1.364 | .410 | 1 | .522 | 2.395 |
| ParentEdLevel(2) | -.276 | 1.303 | .045 | 1 | .832 | .758 |
| SeniorInstGrants | | | 9.836 | 7 | .198 | |
| SeniorInstGrants(1) | -3.370 | 1.481 | 5.176 | 1 | .023 | .034 |
| SeniorInstGrants(2) | -1.695 | 1.600 | 1.122 | 1 | .290 | .184 |
| SeniorInstGrants(3) | -1.943 | 1.532 | 1.609 | 1 | .205 | .143 |
| SeniorInstGrants(4) | -.255 | 1.637 | .024 | 1 | .876 | .775 |
| SeniorInstGrants(5) | -1.340 | 1.821 | .541 | 1 | .462 | .262 |
| SeniorInstGrants(6) | 16.770 | 7758.058 | .000 | 1 | .998 | 1.919E7 |
| SeniorInstGrants(7) | -4.210 | 2.011 | 4.381 | 1 | .036 | .015 |
| SeniorFederalLoans | | | 2.115 | 2 | .347 | |
| SeniorFederalLoans(1) | -1.376 | 1.474 | .872 | 1 | .351 | .253 |
| SeniorFederalLoans(2) | -1.905 | 1.387 | 1.888 | 1 | .169 | .149 |
| Constant | 21.295 | 8382.904 | .000 | 1 | .998 | 1.771E9 |

Two variables had significant odds ratios: senior year GPA, sophomore and race.

*Interpretation for odds ratios:*

- Senior year GPA—For every one unit increase in sophomore year GPA, the odds of enrolling for junior year increase 3.482 when controlling for other variables.
- Race—As a categorical variable, "white" was used as the reference value. Therefore, the odds of a non-white student enrolling for a fifth year were .117 of white students when controlling for other variables.

### 4.2.5 Persistence to Sixth Year

A total of 262 students enrolled for their fifth year. Of that group, 63 students returned for their sixth year, while 27 students did *not* return for their sixth year. One hundred seventy-two students graduated prior to their sixth year, so they were removed from this analysis.

Additionally, 37 students borrowed private student loans in their fifth year. The amount of private student loans borrowed by each student varied greatly, ranging from $1,000 to $33,290 for the year. The average private student loan amount amongst the 37 borrowers was $12,047.

Data were further analyzed using the binary logistic regression feature of SPSS. Sixth year enrollment was coded as the dependent variable; while SAT score, high school GPA, fifth year GPA, family income, race, gender, parent education level, fifth year federal student loans, fifth year institutional grants and annual amount of private student loans borrowed were coded as the independent variables.

The chi-square value of the Hosmer and Lemeshow Goodness of Fit Test was 9.785 with 8 degrees of freedom and a significance level of .280. The significance level suggests that the

set of variables has goodness of fit. The following table summarizes the statistics related to the Hosmer and Lemeshow Test.

**Table 42.** Hosmer and Lemeshow Test for Question 2, Persistence to Sixth Year

| **Chi-Square** | **df** | **Sig.** |
|---|---|---|
| 9.78 | 8 | .280 |

SPSS was able to correctly classify 70% of the cases without any independent variables. Overall, the independent variables correctly predicted persistence to sixth year in 87.8% of the cases, which is an improvement over the classification without any independent variable. The following table shows a breakdown of the classification using the independent variables. Much like other sets of variables, this set of variables was successful in predicting both students enrolled (95.2%) and not enrolled (70.4%).

**Table 43.** Classification Table for Question 2, Persistence to Sixth Year

| **Observed** | | **Predicted** | | |
|---|---|---|---|---|
| | | **Enrollment Status as Fifth Year** | | |
| | | Not Enrolled | Enrolled | Percentage Correct |
| **Enrollment Status as Fifth Year** | Not Enrolled | 19 | 8 | 70.4 |
| | Enrolled | 3 | 60 | 95.2 |
| | Overall Percentage | | | 87.8 |

This set of variables passed the goodness of fit test, although only two of the independent variables contributed significantly to the predictive nature. Only fifth year GPA (.035) and fifth

year federal student loans (.035) had a Wald level of significance less than .05, indicating significant level of contribution to the set. Private student loan borrower status (.535) again did not contribute to the predictive nature. Following is a complete list of the Wald statistics for each of the independent variables.

**Table 44.** Variables in the Equation for Question 2, Persistence to Sixth Year

| | B | S.E. | Wald | df | Sig. | Ex(B) |
|---|---|---|---|---|---|---|
| FifthPrivateLoans | | | 2.185 | 3 | .535 | |
| FifthPrivateLoans(1) | -1.291 | .979 | 1.738 | 1 | .187 | .275 |
| FifthPrivateLoans(2) | .024 | 1.611 | .000 | 1 | .988 | 1.025 |
| FifthPrivateLoans(3) | .030 | 1.620 | .000 | 1 | .985 | 1.030 |
| HSGPA | -2.453 | 1.515 | 2.622 | 1 | .105 | .086 |
| SAT | | | 4.798 | 5 | .441 | |
| SAT(1) | 17.280 | 9595.980 | .000 | 1 | .999 | 3.197E7 |
| SAT(2) | 16.886 | 9595.980 | .000 | 1 | .999 | 2.155E7 |
| SAT(3) | 14.810 | 9595.981 | .000 | 1 | .999 | 2704344.134 |
| SAT(4) | 18.001 | 9595.980 | .000 | 1 | .999 | 6.573E7 |
| SAT(5) | 18.408 | 9595.981 | .000 | 1 | .998 | 9.878E7 |
| FifthGPA | 3.170 | 1.502 | 4.452 | 1 | .035 | 23.808 |
| FamilyIncome | | | 6.784 | 9 | .660 | |
| FamilyIncome(1) | -3.879 | 2.093 | 3.436 | 1 | .064 | .021 |
| FamilyIncome(2) | 17.534 | 19515.872 | .000 | 1 | .999 | 4.120E7 |
| FamilyIncome(3) | -1.494 | 1.878 | .633 | 1 | .426 | .224 |
| FamilyIncome(4) | .043 | 1.932 | .000 | 1 | .982 | 1.044 |
| FamilyIncome(5) | -.870 | 1.524 | .326 | 1 | .568 | .419 |
| FamilyIncome(6) | -2.030 | 1.647 | 1.519 | 1 | .218 | .131 |
| FamilyIncome(7) | -1.744 | 1.702 | 1.049 | 1 | .306 | .175 |
| FamilyIncome(8) | 2.479 | 2.266 | 1.197 | 1 | .274 | 11.931 |
| FamilyIncome(9) | -1.827 | 2.143 | .727 | 1 | .394 | .161 |
| Race(1) | -2.388 | 1.379 | 3.002 | 1 | .083 | .092 |
| Gender(1) | -1.999 | 1.066 | 3.515 | 1 | .061 | .135 |
| ParentEdLevel | | | 3.375 | 2 | .185 | |
| ParentEdLevel(1) | -3.915 | 2.156 | 3.297 | 1 | .069 | .020 |
| ParentEdLevel(2) | -3.086 | 2.110 | 2.140 | 1 | .144 | .046 |
| FifthInstGrants | | | .000 | 4 | 1.000 | |
| FifthInstGrants(1) | -38.385 | 13047.426 | .000 | 1 | .998 | .000 |
| FifthInstGrants(2) | -19.345 | 27134.398 | .000 | 1 | .999 | .000 |
| FifthInstGrants(3) | -59.156 | 42257.664 | .000 | 1 | .999 | .000 |
| FifthInstGrants(4) | -25.018 | 42257.664 | .000 | 1 | 1.000 | .000 |
| FifthFederalLoans | | | 6.727 | 2 | .035 | |
| FifthFederalLoans(1) | -5.455 | 2.377 | 5.267 | 1 | .022 | .004 |
| FifthFederalLoans(2) | -2.988 | 2.069 | 2.086 | 1 | .149 | .050 |
| Constant | 31.839 | 8840.392 | .000 | 1 | .997 | 6.719E13 |

Two variables had significant odds ratios: fifth year GPA and fifth year federal loans.

*Interpretation for odds ratios:*

- Fifth year GPA—For every one unit increase in fifth year GPA, the odds of a student enrolling for a sixth year increased 23.746 when controlling for other variables.
- Fifth year federal loans—As a categorical variable, "$5,500 and above" was used as the reference value. When controlling for other variables, the odds of a student with no federal loans enrolling for a sixth year were .004 of the odds of a student with more than $5,500 in federal loans.

## 4.3 RESEARCH QUESTION 3

*Does a statistically significant relationship exist between private student loan borrower status and graduation status at a private, four-year university, while controlling for a group of selected independent variables?*

### 4.3.1 Graduation Status

All 988 students were included in the analysis for this research question. Of the 988 students who originally enrolled for their freshmen year, 521 students graduated within six years, while 467 students did *not* graduate within six years.

A total of 347 student borrowed private student loans at some point in their enrollment. Of those borrowers, 207 graduated within six years. Below is a cross-tabulation table that

illustrates the difference in graduation rates between private student loan borrowers and non-borrowers.

**Table 45.** Cross-tabulation Table for Question 3

| **Borrower Status** | **Graduate Status** | | | |
|---|---|---|---|---|
| | | Non-Graduate | Graduate | Total |
| | Non-Borrower | 327 | 314 | 641 |
| | Borrower | 140 | 207 | 37 |
| | Total | 46 | 521 | 988 |

Data were further analyzed using the binary logistic regression feature of SPSS. Graduation status was coded as the dependent variable; while SAT score, high school GPA, college GPA, family income, race, gender, parent education level, aggregate federal student loans, aggregate institutional grants and private student loan borrower status were coded as the independent variables.

The chi-square value of the Hosmer and Lemeshow Goodness of Fit Test was 5.395 with 8 degrees of freedom and a significance level of .715. The significance level suggests that the set of variables has goodness of fit. The following table summarizes the statistics related to the Hosmer and Lemeshow Test.

**Table 46.** Hosmer and Lemeshow Test for Question 3

| **Chi-Square** | **df** | **Sig.** |
|---|---|---|
| 5.395 | 8 | .715 |

SPSS was able to correctly classify 52.7% of the cases without any independent variables. Overall, the independent variables correctly predicted graduation status in 88.3% of the cases, which is a significant improvement over the classification without any independent variable. The following table shows a breakdown of the classification using the independent variables. This set of variables was fairly accurate in predicting outcome in both the graduate (84.8%) and non-graduate (88.3%) categories.

**Table 47.** Classification Table for Question 3

| **Observed** | | **Predicted** | | |
|---|---|---|---|---|
| | | **Graduate Status** | | |
| | | Non-Graduate | Graduate | Percentage Correct |
| **Graduate Status** | Non-Graduate | 396 | 71 | 84.8 |
| | Graduate | 45 | 476 | 91.4 |
| | Overall Percentage | | | 88.3 |

This set of variables passed the goodness of fit test even though all of the independent variables did not contribute significantly to the predictive nature of the set. SAT score (.018), college GPA (.000), race (.036), aggregate institutional grants (.000) and aggregate federal student loans had a Wald level of significance less than .05, indicating significant level of contribution. Private student loan borrower status (.659) did not contribute to the predictive nature. Following is a complete list of the Wald statistics for each of the independent variables.

**Table 48.** Variables in the Equation for Question 3

| | B | S.E. | Wald | df | Sig. | Ex(B) |
|---|---|---|---|---|---|---|
| PrivateBorrower Status(1) | -.117 | .265 | .195 | 1 | .659 | .890 |
| HSGPA | -.421 | .298 | 2.002 | 1 | .157 | .656 |
| SAT | | | 13.656 | 5 | .018 | |
| SAT(1) | 1.719 | .773 | 4.948 | 1 | .026 | 5.580 |
| SAT(2) | 1.169 | .722 | 2.623 | 1 | .105 | 3.218 |
| SAT(3) | 1.101 | .696 | 2.501 | 1 | .114 | 3.007 |
| SAT(4) | .300 | .694 | .187 | 1 | .666 | 1.350 |
| SAT(5) | .296 | .736 | .162 | 1 | .687 | 1.345 |
| CollegeGPA | 2.959 | .335 | 78.219 | 1 | .000 | 19.287 |
| FamilyIncome | | | 11.140 | 9 | .266 | |
| FamilyIncome(1) | -.792 | .790 | 1.007 | 1 | .316 | .453 |
| FamilyIncome(2) | -1.640 | .692 | 5.619 | 1 | .018 | .194 |
| FamilyIncome(3) | -.672 | .490 | 1.880 | 1 | .170 | .511 |
| FamilyIncome(4) | -.825 | .444 | 3.448 | 1 | .063 | .438 |
| FamilyIncome(5) | -.761 | .452 | 2.838 | 1 | .092 | .467 |
| FamilyIncome(6) | -1.080 | .444 | 5.921 | 1 | .015 | .339 |
| FamilyIncome(7) | -.914 | .420 | 4.744 | 1 | .029 | .401 |
| FamilyIncome(8) | -.415 | .428 | .940 | 1 | .332 | .661 |
| FamilyIncome(9) | -.401 | .514 | .608 | 1 | .435 | .670 |
| Race(1) | -.868 | .413 | 4.419 | 1 | .036 | .420 |
| Gender(1) | .346 | .249 | 1.937 | 1 | .164 | 1.414 |
| ParentEdLevel | | | 1.814 | 2 | .404 | |
| ParentEdLevel(1) | -.289 | .464 | .390 | 1 | .533 | .749 |
| ParentEdLevel(2) | -.546 | .474 | 1.330 | 1 | .249 | .579 |
| AggregateInstGrants | | | 63.141 | 6 | .000 | |
| AggregateInstGrants(1) | -2.759 | .620 | 19.767 | 1 | .000 | .063 |
| AggregateInstGrants(2) | -3.445 | .489 | 49.582 | 1 | .000 | .032 |
| AggregateInstGrants(3) | -1.846 | .462 | 15.953 | 1 | .000 | .158 |
| AggregateInstGrants(4) | -1.705 | .509 | 11.235 | 1 | .001 | .182 |
| AggregateInstGrants(5) | -.880 | .559 | 2.479 | 1 | .115 | .415 |
| AggregateInstGrants(6) | -1.427 | .655 | 4.750 | 1 | .029 | .240 |
| AggregateFedLoans | | | 99.043 | 6 | .000 | |
| AggregateFedLoans(1) | -1.806 | .500 | 13.032 | 1 | .000 | .164 |
| AggregateFedLoans(2) | -3.302 | .522 | 39.979 | 1 | .000 | .037 |
| AggregateFedLoans(3) | -2.897 | .515 | 31.703 | 1 | .000 | .055 |
| AggregateFedLoans(4) | -.777 | .480 | 2.624 | 1 | .105 | .460 |
| AggregateFedLoans(5) | .240 | .438 | .300 | 1 | .584 | 1.271 |
| AggregateFedLoans(6) | -.036 | .503 | .005 | 1 | .943 | .965 |
| Constant | 3.849 | 1.554 | 6.135 | 1 | .013 | .021 |

Five variables had significant odds ratios: SAT score, sophomore year GPA, sophomore institutional grants and sophomore federal loans.

*Interpretation for odds ratios:*

- SAT score—As a categorical variable, "1,250 and above" was used as the reference value. Only one value had a significant Wald statistic—the lowest category of SAT scores, below 850. This means that the odds of a student with SAT scores below 850 graduating within six years were 5.580 greater than the odds of a student with an SAT score of 1,250 and above when controlling for other variables.
- College GPA—For every one unit increase in college GPA, the odds of graduating increased 19.287 when controlling for other variables.
- Race—As a categorical variable, "white" was used as the reference value. Therefore, the odds of a non-white student graduating within six years were .430 of white students when controlling for other variables.
- Aggregate institutional grants—As a categorical variable, "$25,000 and above" was used as the reference value. Note that five values ($0; up to $5,000; $5,001-$10,000; $10,001-$15,000; $20,000-$25,000) had significant Wald statistics. When controlling for other variables, the odds of a student with no institutional grants graduating within six years were .063 of the odds of a student with more than $25,000 in institutional grants; the odds of a student with up to $5,000 in institutional grants graduating within six years were .032 the odds of a student with more than $25,000 in institutional grants; the odds of a student with $5,001-$10,000 in institutional grants graduating within six years were .158 the odds of a student with more than $25,000 in institutional grants; the odds of a student with $10,001-$15,000 in institutional grants graduating within six years were .182 the

odds of a student with more than $25,000 in institutional grants; the odds of a student graduating within six years with $20,000-$25,000 in institutional grants were .240 the odds of a student with more than $25,000 in institutional grants.

- Aggregate federal loans—As a categorical variable, "$25,000 and above" was used as the reference value. Note that three values ($0; up to $1-$5,000; $5,001-$10,000) had significant Wald statistics. When controlling for other variables, the odds of a student with no federal loans graduating within six years were .164 the odds of a student with more than $25,000 in federal loans; the odds of a student with up to $5,000 in federal loans graduating within six years were .037 the odds of a student with more than $25,000 in federal student loans; the odds of a student with $5,001-$10,000 in federal loans graduating within six years were .055 the odds of a student with more than $25,000 in federal loans.

## 4.4 RESEARCH QUESTION 4

*Does a statistically significant relationship exist between aggregate dollar amount of private student loans borrowed and the graduation status of traditional students at a private, four-year university, while controlling for the aforementioned group of selected independent variables?*

### 4.4.1 Graduation Status

Of the 988 students who originally enrolled for their freshmen year, 521 students graduated within six years, while 467 students did *not* graduate within six years. A total of 347 student borrowed private student loans at some point in their enrollment. Of those borrowers, 207 graduated within six years.

The aggregate amount of private student loans borrowed by each student varied greatly, ranging from $650 to $90,240. The average aggregate private student loan amount amongst the 347 borrowers was $19,309.

Data were further analyzed using the binary logistic regression feature of SPSS. Graduation status was coded as the dependent variable; while SAT score, high school GPA, college GPA, family income, race, gender, parent education level, aggregate federal student loans, aggregate institutional grants and aggregate private student loans borrowed were coded as the independent variables.

The chi-square value of the Hosmer and Lemeshow Goodness of Fit Test was 6.403 with 8 degrees of freedom and a significance level of .602. The significance level suggests that the set of variables has goodness of fit. The following table summarizes the statistics related to the Hosmer and Lemeshow Test.

**Table 49.** Hosmer and Lemeshow Test for Question 4

| **Chi-Square** | **df** | **Sig.** |
|---|---|---|
| 6.403 | 8 | .602 |

SPSS was able to correctly classify 52.7% of the cases without any independent variables. Overall, the independent variables correctly predicted graduation status in 88.3% of the cases, which is a significant improvement over the classification without any independent variable. The following table shows a breakdown of the classification using the independent variables. This set of variables was also fairly accurate in predicting for *both* graduate (84.4%) and non-graduates (91.7%).

**Table 50.** Classification Table for Question 4

| **Observed** | | **Predicted** | | |
|---|---|---|---|---|
| | | **Graduate Status** | | |
| | | Non-Graduate | Graduate | Percentage Correct |
| **Graduate Status** | Non-Graduate | 394 | 73 | 84.4 |
| | Graduate | 43 | 478 | 91.7 |
| | Overall Percentage | | | 88.3 |

This set of variables passed the goodness of fit test even though all of the independent variables did not contribute significantly to the predictive nature of the set. SAT (.029), college GPA (.000), race (.028), aggregate institutional grants (.000) and aggregate federal student loans (.000) had a Wald level of significance less than .05, indicating significant level of contribution. Aggregate private student loans borrowed (.797) did not contribute to the predictive nature. Following is a complete list of the Wald statistics for each of the independent variables.

**Table 51.** Variables in the Equation for Question 4

| | B | S.E. | Wald | df | Sig. | Ex(B) |
|---|---|---|---|---|---|---|
| AggregatePrivate | | | 3.096 | 6 | .797 | .890 |
| HSGPA | -.483 | .304 | 2.529 | 1 | .112 | .617 |
| SAT | | | 12.451 | 5 | .029 | |
| SAT(1) | 1.745 | .780 | 5.001 | 1 | .025 | 5.727 |
| SAT(2) | 1.198 | .726 | 2.726 | 1 | .099 | 3.314 |
| SAT(3) | 1.174 | .701 | 2.807 | 1 | .094 | 3.235 |
| SAT(4) | .390 | .699 | .312 | 1 | .577 | 1.477 |
| SAT(5) | .409 | .743 | .303 | 1 | .582 | 1.505 |
| CollegeGPA | 3.010 | .340 | 78.534 | 1 | .000 | 20.289 |
| FamilyIncome | | | 10.289 | 9 | .328 | |
| FamilyIncome(1) | -.775 | .795 | .951 | 1 | .329 | .461 |
| FamilyIncome(2) | -1.652 | .716 | 5.332 | 1 | .021 | .192 |
| FamilyIncome(3) | -.650 | .494 | 1.729 | 1 | .189 | .522 |
| FamilyIncome(4) | -.816 | .446 | 3.355 | 1 | .067 | .442 |
| FamilyIncome(5) | -.748 | .456 | 2.689 | 1 | .101 | .473 |
| FamilyIncome(6) | -1.033 | .450 | 5.278 | 1 | .022 | .356 |
| FamilyIncome(7) | -.898 | .423 | 4.516 | 1 | .034 | .407 |
| FamilyIncome(8) | -.430 | .429 | 1.008 | 1 | .315 | .650 |
| FamilyIncome(9) | -.404 | .521 | .602 | 1 | .438 | .667 |
| Race(1) | -.914 | .417 | 4.811 | 1 | .028 | .401 |
| Gender(1) | .354 | .250 | 2.011 | 1 | .156 | 1.425 |
| ParentEdLevel | | | 1.846 | 2 | .397 | |
| ParentEdLevel(1) | -.313 | .468 | .448 | 1 | .503 | .731 |
| ParentEdLevel(2) | -.567 | .479 | 1.400 | 1 | .237 | .567 |
| AggregateInstGrants | | | 62.640 | 6 | .000 | |
| AggregateInstGrants(1) | -2.889 | .633 | 20.808 | 1 | .000 | .056 |
| AggregateInstGrants(2) | -3.477 | .496 | 49.061 | 1 | .000 | .031 |
| AggregateInstGrants(3) | -1.887 | .469 | 16.196 | 1 | .000 | .152 |
| AggregateInstGrants(4) | -1.722 | .515 | 11.168 | 1 | .001 | .179 |
| AggregateInstGrants(5) | -.948 | .569 | 2.779 | 1 | .096 | .387 |
| AggregateInstGrants(6) | -1.456 | .661 | 4.859 | 1 | .027 | .233 |
| AggregateFedLoans | | | 97.880 | 6 | .000 | |
| AggregateFedLoans(1) | -1.809 | .511 | 12.539 | 1 | .000 | .164 |
| AggregateFedLoans(2) | -3.348 | .529 | 40.047 | 1 | .000 | .035 |
| AggregateFedLoans(3) | -2.909 | .523 | 30.889 | 1 | .000 | .055 |
| AggregateFedLoans(4) | -.792 | .491 | 2.606 | 1 | .106 | .453 |
| AggregateFedLoans(5) | .254 | .444 | .328 | 1 | .567 | 1.290 |
| AggregateFedLoans(6) | -.025 | .509 | .002 | 1 | .960 | .975 |
| Constant | 3.691 | 1.579 | 5.461 | 1 | .019 | .025 |

Five variables had significant odds ratios: SAT score, sophomore year GPA, sophomore institutional grants and sophomore federal loans.

*Interpretation for odds ratios:*

- SAT score—As a categorical variable, "1,250 and above" was used as the reference value. Only one value had a significant Wald statistic—the lowest category of SAT scores, below 850. This means that the odds of a student with SAT scores below 850 graduating within six years were 5.27 greater than the odds of a student with an SAT score of 1,250 and above when controlling for other variables.
- College GPA—For every one unit increase in college GPA, the odds of graduating increased 20.289 when controlling for other variables.
- Race—As a categorical variable, "white" was used as the reference value. Therefore, the odds of a non-white student graduating within six years were .401 of white students when controlling for other variables.
- Aggregate institutional grants—As a categorical variable, "$25,000 and above" was used as the reference value. Note that five values ($0; up to $5,000; $5,001-$10,000; $10,001-$15,000; $20,000-$25,000) had significant Wald statistics. When controlling for other variables, the odds of a student with no institutional grants graduating within six years were .056 of the odds of a student with more than $25,000 in institutional grants; the odds of a student with up to $5,000 in institutional grants graduating within six years were .031 the odds of a student with more than $25,000 in institutional grants; the odds of a student with $5,001-$10,000 in institutional grants graduating within six years were .152 the odds of a student with more than $25,000 in institutional grants; the odds of a student with $10,001-$15,000 in institutional grants graduating within six years were .179 the

odds of a student with more than $25,000 in institutional grants; the odds of a student graduating within six years with $20,000-$25,000 in institutional grants were .233 the odds of a student with more than $25,000 in institutional grants.

- Aggregate federal loans—As a categorical variable, "$25,000 and above" was used as the reference value. Note that three values ($0; up to $1-$5,000; $5,001-$10,000) had significant Wald statistics. When controlling for other variables, the odds of a student with no federal loans graduating within six years were .164 the odds of a student with more than $25,000 in federal loans; the odds of a student with up to $5,000 in federal loans graduating within six years were .035 the odds of a student with more than $25,000 in federal student loans; the odds of a student with $5,001-$10,000 in federal loans graduating within six years were .055 the odds of a student with more than $25,000 in federal loans.

## 4.5 SUMMARY OF FINDINGS

### 4.5.1 Research Question 1

*Does a statistically significant relationship exist between private student loan borrower status and persistence status of traditional students at a private, four-year university, while controlling for the aforementioned group of selected independent variables?*

No, a statistically significant relationship does NOT exist.

### 4.5.2 Research Question 2

*Does a statistically significant relationship exist between the dollar amount of private student loans borrowed annually and the persistence status of traditional students at a private, four-year university, while controlling for a group of selected independent variables?*

No, a statistically significant relationship does NOT exist.

### 4.5.3 Research Question 3

*Does a statistically significant relationship exist between private student loan borrower status and graduation status at a private, four-year university, while controlling for a group of selected independent variables?*

No, a statistically significant relationship does NOT exist.

### 4.5.4 Research Question 4

*Does a statistically significant relationship exist between aggregate dollar amount of private student loans borrowed and the graduation status of traditional students at a private, four-year university, while controlling for the aforementioned group of selected independent variables?*

No, a statistically significant relationship does NOT exist.

**Table 52.** Summary of Findings

| Research Question | Goodness Of Fit | Private Loan Independent Variable | Private Loan Relationship | Other Significant Independent Variables |
|---|---|---|---|---|
| 1) Sophomore persistence | Yes | Freshman private loan borrower status | No | SAT, freshman GPA, gender, freshman institutional grants |
| 1) Junior persistence | Yes | Sophomore private loan borrower status | No | Sophomore GPA, sophomore institutional grants, sophomore federal loans |
| 1) Senior persistence | No | Junior private loan borrower status | No | N/A |
| 1) Fifth persistence | Yes | Senior private loan borrower status | No | Senior GPA, race, gender |
| 1) Sixth persistence | Yes | Fifth year private loan borrower status | No | Fifth GPA, fifth federal loans |
| 2) Sophomore persistence | Yes | Freshman private loan amount | No | SAT, freshman GPA, gender, freshman institutional grants |
| 2) Junior persistence | Yes | Sophomore private loan amount | No | Sophomore GPA, sophomore institutional grants, sophomore federal loans |
| 2) Senior persistence | No | Junior private loan amount | No | N/A |
| 2) Fifth persistence | Yes | Senior private loan amount | No | Senior GPA, race |
| 2) Sixth persistence | Yes | Fifth year private loan amount | No | Fifth GPA, fifth federal loans |
| 3) Graduation | Yes | Private loan borrower status | No | SAT, college GPA, race, aggregate institutional grants, aggregate federal loans |
| 4) Graduation | Yes | Aggregate private loan amount | No | SAT, college GPA, race, aggregate institutional grants, aggregate federal loans |

# 5.0 CONCLUSIONS

## 5.1 PRIVATE STUDENT LOANS AS INDEPENDENT VARIABLES

Though the set of variables for most of the research questions were determined to have satisfactory goodness of fit statistics, private student loans as independent variables did not contribute significantly in any of the research questions. Neither the presence of private student loans (borrower status) nor the amount of private student loans borrowed produced significant contribution in any of the research questions. As a result, it appears that ***no statistically significant relationship exists between private student loan borrowing and persistence & graduation rates when controlling for other factors.***

## 5.2 OTHER FINANCIAL AID AS INDEPENDENT VARIABLES

Unlike private student loans, however, both federal student loans and institutional grants seemed to have strong relationships with persistence & graduation status. The odds ratios for institutional grant independent variables were illustrative of their impact on persistence, particularly on the first two years of enrollment. This supports previous research by Gansemer-Topf and Schuh (2005), who found that "the amount of institutional grant per student" contributed "significantly" to both persistence and graduation rates.

For example, the odds of a student enrolling for their sophomore year with no institutional grants were only .248 the odds of a student enrolling for their sophomore year with more than $6,000 in institutional grants. Additionally, the odds of a student graduating within six years of enrollment with no institutional grants were only .056 of those who had aggregate institutional aid of more than $25,000 when controlling for other factors. The odds ratios were repetitive for other levels of institutional grants in the freshman and sophomore years, as well. This demonstrates a positive relationship between institutional grants and persistence (through the sophomore and junior years) & graduation rates. Institutional grants as independent variables proved to be some of the more consistent and stronger contributing variables in many of the research questions.

The odds ratios for federal student loan independent variables followed a similar pattern to those of institutional grants. Essentially, the higher the student loan amounts, the higher the odds that persistence (through junior and sixth year) and graduation would occur. Like institutional grants, there was a positive relationship between federal student loans and persistence & graduation rates. The results also support the findings by St. John (2000), who concluded that federal loan borrowing may have an impact on persistence rates, particularly when the federal loan limits increase during the junior and senior year.

Interestingly, the students with the highest odds of persisting and graduating were those who borrowed more than the federal Stafford loan limits for their academic level (i.e., $2,625, $3,500). Those students would have had to have borrowed federal Perkins loans (awarded by the university) and/or additional federal Unsubsidized Stafford loans (due to Parent PLUS loan denial). So, students with access to additional federal loan funds had improved odds of persisting and graduating when controlling for other variables.

Students in this study were particularly impacted by access to institutional grants and federal student loans. The institution might consider these results in evaluating its current institutional financial aid policies. The results suggest that the institution might be able to increase its persistence & graduation rates by increasing its allocation of institutional grants. Additionally, the institution might use this data to provide support for the current proposals in Congress to increase federal student loan limits.

## 5.3 ACADEMIC VALUES AS INDEPENDENT VARIABLES

Not surprisingly, college GPAs were strong predictors of persistence and graduation status. College GPAs were shown to have positive relationships with persistence & graduation rates. As college GPAs increased, the odds of persisting and graduating increased, as well. Essentially, students who performed well academically were more likely to enroll and graduate than those who performed less well.

Results for SAT scores as independent variables were a little more mixed. SAT scores were strong predictors for persistence only to the sophomore year. They were also strong predictor of graduation status.

The relationship between SAT scores and persistence & graduation rates was decidedly different, however, from college GPA. According to the odds ratios, students with low SAT scores (less than 850) had higher odds of graduating and persisting than students with high SAT scores (above 1,250). These results can be viewed in a couple of different ways. On one hand, the odds could be attributed to the extra services and help provided to students who were admitted with low SAT scores. The institution might have done a very good job in assisting the

students with low SAT scores. On the other hand, the odds can also be attributed to an environment that is not amenable to students who were admitted with high SAT scores. In any case, the results in this study appear to run contrary to conventional wisdom that SAT scores are strong predictors of success.

Institutions often use SAT scores in conjunction with high school GPA to determine whether to admit a student or not. While SAT scores were contributing variables in some of the research questions, high school GPAs were not contributing variables in any of the research questions. As result, it appears that no significant relationship exists between high school GPA and persistence & graduation rates when controlling for other variables. These results diverge from previous research (Adelman, 1999; Tierney, et. al, 2003), which suggests a positive relationship between the rigor of the high school curriculum and the likelihood that the student will persist and graduate from college.

## 5.4 OTHER DEMOGRAPHIC VALUES AS INDEPENDENT VARIABLES

Race contributed significantly to the two research questions assessing graduation status. White students had greater odds of graduating than non-white students. It appears non-white students were particularly vulnerable to dropping out after the senior year (without earning a degree). Non-white students had very small odds of returning for a fifth year when compared with students. The results parallel national statistics, in which many institutions nationwide report double-digit gaps between black and white student graduation rates (Carey, 2005).

Gender independent variables only contributed significantly to the research questions assessing persistence to the sophomore and junior years. In both instances, male students had

greater odds of enrolling than female students. This could be attributed to the unequal gender composition of the sample, which was 59.4% male and 40.6% female.

Though previous research studies have found parent education level (Chen, 2005) and family income (Astin, 1997; Kezar, 2001; St. John, et al., 2001; St. John, et al., 2005) to be strong predictors of college success, neither parent education level nor family income variables were contributing independent variables in any of the research questions in this study. As a result, it appears that no significant statistical relationship exists between either family income or parent education level and persistence & graduation rates, when controlling for other factors.

## 5.5 SUMMARY

According to the logistic regression results for each research question, no statistically significant relationship exists between private student loan borrowing and persistence & graduation rates when controlling for other factors. Neither the presence of private student loans (borrower status) nor the amount of private student loans borrowed showed significant relationships in any of the research questions.

Although the evidence suggests that no relationship exists between private student loan borrowing and persistence & graduation rates, the results of this study still contain valuable information. Many of the other independent variables were shown to have statistically significant relationships to persistence and graduation status. The independent variables with statistically significant relationships with persistence status were: SAT, college GPA, gender, race, institutional grants and federal student loans. The independent variables with statistically

significant relationships with graduation status were: SAT, college GPA, race, institutional aid and federal student loans.

## 5.6 POLICY RECOMMENDATIONS

The results of this study can be used to inform decision-making by university administrators on issues related to persistence and graduation rates. In particular, the policy recommendations below suggest targeted ways to improve persistence and graduation rates, while making efficient use of scarce financial resources. Ultimately, improved persistence rates will increase tuition revenue.

### 5.6.1 Increase Institutional Grants and Scholarships

One of the independent variables with the strongest relationship to persistence & graduation status was institutional grants and scholarships. Persistence and graduation rates generally increased as institutional grants and scholarships increased, particularly above the $2,000 mark. This positive relationship suggests that the university could improve its retention and graduation rates by allocating additional funds to institutional grants and scholarships. While this may seem difficult in view of other institutional priorities, it should be given strong consideration during the budgeting process because improved persistence rates would bring in additional net tuition revenue. Although additional awards would lower the net tuition revenue per individual student, it should also increase the likelihood that more students would enroll, thereby increasing overall net tuition revenue.

According to the logistic regression results, increased institutional aid would be most effective if targeted at freshmen and sophomores. Institutional grants and scholarships showed a significant relationship only for the freshman and sophomore years in the persistence research questions (1 and 2). As a result, it makes the most sense to target additional institutional aid to freshmen and sophomores. There was no clear relationship after a student persisted to the junior year. Once a student made it to the junior year, he or she was much more likely to stay until graduation. Students who dropped out at that point do so for many varied reasons that were not be captured by the independent variables in the models.

### 5.6.2 Advocate for Increased Access to Federal Student Loans

Another independent variable with a strong relationship to persistence and graduation status was federal student loans. Persistence and graduation rates generally increased as students borrowed more in federal loans. In order for students to borrow at the highest levels in the logistic regression equations, they would have had access to the additional unsubsidized Stafford loan from a parent PLUS denial, or they would have had to access to a federal Perkins loan. In either case, it appears that students with access to additional federal loans graduate and persist at higher levels when controlling for other variables.

As such, it seems logical that the university should advocate for additional access to federal loan programs, either through increased Stafford loan borrowing limits or increased allocations to the Perkins Loan program. In the current political climate, the research results could provide invaluable documentation of the benefits of increased access to federal student loans.

### 5.6.3 Focus on Tutoring and Advising Programs

Finally, the independent variable with the most consistent positive relationship to persistence and graduation status was college grade point average. Persistence and graduation rates increased as college grade point averages increased. As a result, it seems logical to emphasize programs designated to help students academically, such as tutoring or advising programs. This recommendation is also supported by prior research (Muraskin, et al., 2004), which found that advising center for at-risk students improved persistence and graduation rates.

## 5.7 FURTHER STUDIES

There were some interesting findings in this research study that could provide a foundation for follow-up study. Those include:

SAT scores—Why do students with low SAT scores have higher odds of persistence than student with high SAT scores when controlling for other variables? Are students with high SAT scores dissatisfied in some way with their educational experience? Or, are student with low SAT scores achieving at higher levels than their scores suggest they should because of extra services (tutoring, advising, etc.) offered?

Gender—Why do male students have higher odds of persistence to the sophomore year than female students when controlling for other variables? National statistics suggest that should be the opposite. Are female student negatively impacted by the gender imbalance at the university?

Race—Why do white students have higher odds of persistence after the senior year than non-white students when controlling for other variables? Does this contribute to the lower odds of graduation for non-white students?

There were also other variables that were purposefully excluded from this study. It might be interesting for a future research study to analyze how their inclusion might change the results. Those variables include:

Non-traditional students—Would their inclusion yield different or similar results given their reputation for erratic enrollment patterns?

Direct-to-consumer loans—Would their inclusion yield different or similar results given their less-stringent borrowing requirements?

# APPENDIX A

## UNIVERSITY OF PITTSBURGH IRB APPROVAL LETTER

# University of Pittsburgh
***Institutional Review Board***

3500 Fifth Avenue
Pittsburgh, PA 15213
(412) 383-1480
(412) 383-1508 (fax)
http://www.irb.pitt.edu/


**Memorandum**

To: SHARI PAYNE

From: CHRISTOPHER RYAN PHD, Vice Chair

Date: 7/7/2008

IRB#: PRO08060252

Subject: Study of the Relationship Between Private Student Loan Borrowing and Persistence & Graduation Rates of Traditional Students at a Private University

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The above-referenced project has been reviewed by the Institutional Review Board. Based on the information provided to the IRB, this project includes no involvement of human subjects, according to the federal regulations [§46.102(f)]. That is, the investigator conducting research will not obtain data through intervention or interaction with the individual, nor will obtain identifiable private information. Should that situation change, the investigator must notify the IRB immediately. Given this determination, you may begin your project.

If any modifications are made to this project, please contact the IRB Office to ensure it continues to meet the no human subjects determination.

Upon completion of your project, be sure to finalize the project by submitting a termination request. Please be advised that your research study may be audited periodically by the University of Pittsburgh Research Conduct and Compliance Office.

# APPENDIX B

## ROBERT MORRIS UNIVERSITY IRB APPROVAL LETTER

ROBERT MORRIS UNIVERSITY

**MEMORANDUM**

TO: Shari Payne
1315 Glencoe Avenue
Pittsburgh, PA 15205

FROM: Fred Kohun
Chair, IRB
Robert Morris University

6001 University Boulevard
Moon Township, PA
15108-1189

412-262-8200
www.rmu.edu

DATE: May 29, 2008

SUBJECT: #080502: Study of the Relationship between Private Student Loan Borrowing and Persistence & Graduation Rates of Traditional Students at a Private University

We received your application for consideration of the above referenced study. After receiving additional information concerning your study it has been concluded that there is no interaction with human subjects. Since this protocol does not involve primary research and human subjects, it is exempt from review by the Institutional Review Board.

# APPENDIX C

## ROBERT MORRIS UNIVERSITY PERMISSION TO USE DATA

ROBERT MORRIS UNIVERSITY

May 27, 2008

Institutional Review Board (IRB)
Robert Morris University
6001 University Boulevard
Moon Township, PA 15108

6001 University Boulevard
Moon Township, PA
15108-1189

412-262-8200
www.rmu.edu

To Whom It May Concern:

This letter of support is in reference to the research proposal that Ms. Shari Payne recently submitted to the Institutional Review Board (IRB) entitled "Study of the Relationship Between Private Student Loan Borrowing and Persistence & Graduation Rates of Traditional Students at a Private University."

I am aware that Ms. Payne wishes to complete this study to fulfill the requirements for a Doctor of Education degree in Administrative and Policy Studies at the University of Pittsburgh. I will permit the use of Robert Morris University student data by Ms. Payne as indicated in her IRB form, which includes a provision that all student identifiers be removed prior to her obtaining the data.

Please let me know if any additional information or approval is required.

Sincerely,

David L. Jamison

David L. Jamison, J.D.
Provost & Senior Vice President
Academic Affairs

# APPENDIX D

## INSTITUTIONS IN THE CARNEGIE CLASSIFICATION: MASTER'S COLLEGE AND UNIVERSITIES (LARGER PROGRAMS)

| Institution Name | City | State | Unitid |
|---|---|---|---|
| Ashland University | Ashland | OH | 201104 |
| Bellevue University | Bellevue | NE | 180814 |
| Bentley College | Waltham | MA | 164739 |
| Bradley University | Peoria | IL | 143358 |
| Cambridge College | Cambridge | MA | 165167 |
| Cardinal Stritch University | Milwaukee | WI | 238430 |
| Chapman University | Orange | CA | 111948 |
| Chapman University-University College | Orange | CA | 262086 |
| College of St Catherine | Saint Paul | MN | 175005 |
| Concordia University-Wisconsin | Mequon | WI | 238616 |
| Dallas Baptist University | Dallas | TX | 224226 |
| Dowling College | Oakdale | NY | 190770 |
| Drake University | Des Moines | IA | 153269 |
| Fairfield University | Fairfield | CT | 129242 |
| Fairleigh Dickinson University-Metropolitan Campus | Teaneck | NJ | 184603 |
| Gonzaga University | Spokane | WA | 235316 |
| Harding University | Searcy | AR | 107044 |
| Hawaii Pacific University | Honolulu | HI | 141644 |
| Inter American University of Puerto Rico-San German | San German | PR | 242617 |
| La Salle University | Philadelphia | PA | 213367 |
| Lesley University | Cambridge | MA | 166452 |
| Lewis University | Romeoville | IL | 146612 |
| Lindenwood University | Saint Charles | MO | 177968 |
| Long Island University-Brooklyn Campus | Brooklyn | NY | 192439 |
| Loyola College in Maryland | Baltimore | MD | 163046 |
| Loyola Marymount University | Los Angeles | CA | 117946 |
| Marist College | Poughkeepsie | NY | 192819 |
| Mercer University | Macon | GA | 140447 |
| Mercy College-Main Campus | Dobbs Ferry | NY | 193016 |
| Monmouth University | West Long Branch | NJ | 185572 |
| National-Louis University | Chicago | IL | 147536 |
| New York Institute of Technology-Old Westbury | Old Westbury | NY | 194091 |
| Providence College | Providence | RI | 217402 |
| Quinnipiac University | Hamden | CT | 130226 |
| Rider University | Lawrenceville | NJ | 186283 |
| Roosevelt University | Chicago | IL | 148487 |
| Sacred Heart University | Fairfield | CT | 130253 |
| Saint Edward's University | Austin | TX | 227845 |
| Saint Joseph's University | Philadelphia | PA | 215770 |
| Saint Xavier University | Chicago | IL | 148627 |
| Santa Clara University | Santa Clara | CA | 122931 |
| Seattle University | Seattle | WA | 236595 |
| Southern New Hampshire University | Manchester | NH | 183026 |
| Suffolk University | Boston | MA | 168005 |
| The College of New Rochelle | New Rochelle | NY | 193645 |
| The University of Findlay | Findlay | OH | 202763 |
| University of Detroit Mercy | Detroit | MI | 169716 |
| University of the Incarnate Word | San Antonio | TX | 225627 |
| Wilkes University | Wilkes-Barre | PA | 216931 |
| Xavier University | Cincinnati | OH | 206622 |

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